PEDESTRIAN AND BICYCLE

ACCESS PLANS

TRI-RAIL STATIONS
PALM BEACH COUNTY, FL

SOUTH FLORIDA REGIONAL TRANSPORTATION

AUTHORITY

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EXECUTIVE SUMMARY

The following plan proposes the best routes between bicycle and pedestrian generators and the six Palm Beach County Tri-Rail Stations. The goal of the pedestrian and bicycle routing plan is increased travel to Tri-Rail stations via cycling and walking. The routing plans attempt to minimize the risk to pedestrians and bicyclists and provide the shortest travel time between the Stations and the attractions/generators.

In order to facilitate the routing, prototypical signage were developed for bicycle and pedestrian routing. Several of the signing options are in the below figures.

Routing Option 1

Routing Option 2

Routing Option 3

Improvements to the routes are recommended for implementation improve pedestrian and/or bicycle use. The end result routing plans and improvements will be a much safer and more efficient pedestrian and bicycle network to the Stations that will ideally increase ridership via pedestrian and bicycle modes. The improvements identified were stratified into short-term, medium-term, and long-term projects based on time needed to complete the projects. The projects are prioritized based on the ability to provide additional access to the station, proximity to the station, anticipated benefit to the station (i.e. – reduced walking / bicycling distance to station, and ability to provide new / improved access to a service area. A master project list of improvements and costs is shown in the below tables.

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
97	Mangonia Park	North Side Station Access	NE Side of Station		ADA Ramp and bicycle racks	13,000	1	New Proposed Improvement	SFRTA	Prioritize Project
1	Boca Raton	Yamato Road	@ El Rio Trail		Bicycle / Pedestrian signal	117,000	2	New Proposed Improvement	Boca Raton, Palm Beach County, SFRTA, FDOT	Meet with agency(s) on Implementation
2	Boca Raton	Over all routing	Boca Raton Area		Bicycle Signage	11,180	3	New Proposed Improvement	SFRTA	Prioritize Project
8	Boca Raton	Over all routing	Boca Raton Area		Pedestrian Signage	2,080	4	New Proposed Improvement	SFRTA	Prioritize Project
29	Delray Beach	Station Improvements	Delray Beach Station		Sidewalks	62,400	5	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation/ Prioritize Project
30	Delray Beach	Signage Improvements	Delray Beach Routing		Pedestrian Routing signage	520	6	New Proposed Improvement	SFRTA	Prioritize Project
45	Lake Worth	Routing Signage	Lake Worth Area		Bicycle Signage	2,860	7	New Proposed Improvement	SFRTA	Prioritize Project
46	Lake Worth	Lake Worth Road	West of station		Add bike lane through bus lane	2,600	8	New Proposed Improvement	SFRTA, Palm-Tran, Palm Beach County, Lake Worth	Meet with agency(s) on Implementation
62	Lake Worth	Routing Signage	Lake Worth Area		Pedestrian Signage	2,340	9	New Proposed Improvement	SFRTA	Prioritize Project

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
84	West Palm Beach	Over all routing	West Palm Beach Area		Pedestrian Signage	2,600	10	New Proposed Improvement	SFRTA	Prioritize Project
86	Mangonia Park	Over all routing	Mangonia Park Area		Bicycle Signage	520	11	New Proposed Improvement	SFRTA	Prioritize Project
98	Mangonia Park	Over all routing	Mangonia Park Area		Pedestrian Signage	1,040	12	New Proposed Improvement	SFRTA	Prioritize Project
41	Boynton Beach	Overall routing	Boynton Beach Area		Pedestrian Signage	3,120	13	New Proposed Improvement	SFRTA	Prioritize Project
42	Boynton Beach	South Side of Site	On Tri-rail station		Sidewalk and ADA Ramps	1,560	14	New Proposed Improvement	SFRTA	Prioritize Project
12	Delray Beach	Signage Improvements	Delray Beach Routing		Bicycle routing	520	15	New Proposed Improvement	SFRTA	Prioritize Project
13	Delray Beach	Station Improvements	Congress	Station	Bicycle Striping	1,300	16	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation
33	Boynton Beach	Station Entrance	High Ridge	Station	Remove turn lanes and add bike lanes	2,600	27	New Proposed Improvement	SFRTA	Prioritize Project

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
66	West Palm Beach	Tamarind Avenue	Banyan	25th St	shared lanes striping and signage	22,100	17	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
67	West Palm Beach	Parker Avenue	Banyan	Flamingo	restriping and signage	169,000	18	New Proposed Improvement / City Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
63	Lake Worth	SW Station Connector	Station	Lake Osbourne Dr	Add sidewalks and routing	137,280	19	New Proposed Improvement	SFRTA, Lake Worth	Meet with agency(s) on Implementation/ Prioritize Project
43	Boynton Beach	Gateway Blvd	W. of I-95	E. of I-95	Improve sidewalk and provide ADA Ramps	15,600	20	New Proposed Improvement	Palm Beach County, FDOT, Boynton Beach	Meet with agency(s) on Implementation
34	Boynton Beach	Gateway Blvd	High Ridge	Seacrest	reconstruct median, restripe laneage	455,000	21	New Proposed Improvement	FDOT, Palm Beach County, Boynton Beach	Meet with agency(s) on Implementation
3	Boca Raton	NW 32nd Street	PBCC	El Rio Trail	widen road to add bike lanes	68,640	22	New Proposed Improvement	PBCC, Boca Raton	Meet with agency(s) on Implementation
87	Mangonia Park	Tri-Rail Entrance	45th St	Station	off-street bike lanes and/or restriping for bike lanes	80,080	23	New Proposed Improvement	SFRTA, Mangonia Park	Meet with agency(s) on Implementation/ Prioritize Project
35	Boynton Beach	High Ridge Rd	Gateway Blvd	Miner	widen road to add bike lanes	137,280	26	City Proposed Improvement	Palm Beach County, Boynton Beach	Meet with agency(s) on Implementation
36	Boynton Beach	Gateway Blvd	Renaissance Commons Blvd	High Ridge	restriping and signage (1)	78,000	28	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
99	Mangonia Park	Meander Drive	Station	53rd Street	Sidewalk, Lighting	31,200	29	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
44	Boynton Beach	Miner Road	West of High Ridge	High Ridge	Sidewalk on south side of road	46,800	30	New Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
47	Lake Worth	B Street	12th Ave S	10th Ave N	Bicycle Striping	23,400	31	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
48	Lake Worth	C Street	12th Ave S	10th Ave N	Bicycle Striping	23,400	32	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
49	Lake Worth	SE Station Connector(1)	Station	6th Ave South	Add shared arrow marking	7,020	33	City Proposed Improvement	Lake Worth, SFRTA, Lake Worth CRA	Meet with agency(s) on Implementation/ Prioritize Project
100	Mangonia Park	53rd Street	Meander	Australian	Sidewalk and lighting improvements	93,600	34	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
51	Lake Worth	Wright Drive	6th Ave South	Lake Osbourne Dr	Add shared arrow marking	2,600	35	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
52	Lake Worth	Akron Street	Lake Osbourne Dr	Lake Worth Road	Add shared arrow marking	1,300	36	New Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
88	Mangonia Park	Meander Drive	Station	53rd Street	shared lanes striping and signage	1,300	38	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
89	Mangonia Park	53rd Street	Meander	Australian	restriping and signage	23,400	39	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
70	West Palm Beach	Evernia/Clematis(1)	Tamarind	Flagler	Restripe, remove parking, remove traffic calming	83,200	40	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
71	West Palm Beach	S Rosmarey Ave	Evernia	Okeechobee	shared lanes striping and signage	5,200	41	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
85	West Palm Beach	Parker S/W gap	Okeechobee	Old Okeechobee	New sidewalk	7,800	42	New Proposed Improvement	West Palm Beach, Palm Beach County, FDOT, SFRTA	Meet with agency(s) on Implementation/ Prioritize Project
37	Boynton Beach	Renaissance Commons Blvd	Old Boynton Rd	Gateway Blvd	restriping and signage	14,300	43	New Proposed Improvement	Boyton Beach	Meet with agency(s) on Implementation
50	Lake Worth	Snowden Dr	Lake Osbourne Dr	6th Ave South	Add shared arrow marking	5,200	44	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
68	West Palm Beach	Flamingo Drive(1)	Parker	Lake	striping and signage	1,950	45	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
69	West Palm Beach	Lake Avenue(1)	Flamingo	Summit	restriping and signage	109,200	46	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
4	Boca Raton	NW 28th Street	FAU Blvd	El Rio Trail	widen road to add bike lanes	45,760	47	New Proposed Improvement	FAU, Boca Raton	Meet with agency(s) on Implementation
101	Mangonia Park	N. Australian Ave	SR 710	53rd Street	improve curbs to add ramps and make ADA compliant	31,200	48	New Proposed Improvement	FDOT, Palm Beach County	Meet with agency(s) on Implementation
72	West Palm Beach	Olive Ave	Evernia	3rd St	shared lanes striping and signage	3,900	53	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
73	West Palm Beach	3rd Street	N Olive	N Dixie	shared lanes striping and signage	1,300	54	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
74	West Palm Beach	N. Dixie Hwy	3rd St	Evernia	shared lanes striping and signage	3,900	55	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
75	West Palm Beach	25th, Tamarind, Service Rd	Tamarind	Windsor Ave	shared lanes striping and signage	7,800	56	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
76	West Palm Beach	Windsor Ave	Service	45th St	striping and signage	11,700	57	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
77	West Palm Beach	36th Street	Windsor	Pointsettia Ave	restriping and signage	41,600	58	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
78	West Palm Beach	15th Street(1)	Tamarind	N Dixie	restriping and signage	20,800	59	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
79	West Palm Beach	7th Street(1)	Autstralian	Rosemary	restriping and signage	15,600	60	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
80	West Palm Beach	Flamingo Drive(1)	Lake	Dixie	restriping and signage	10,400	61	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
81	West Palm Beach	Old Okeechobee	Mercer Ave	Parker	restriping and signage	15,600	62	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
11	Boca Raton	NW 28th Street	FAU Blvd	El Rio Trail	Add Sidewalk	31,200	95	New Proposed Improvement	FAU, Boca Raton	Meet with agency(s) on Implementation
10	Boca Raton	FAU Blvd	NW 35th Street	Florida Atlantic Blvd	Add Sidewalk on West Side and connections to PBCC Campus	124,800	96	New Proposed Improvement	PBCC, FAU, Boca Raton	Meet with agency(s) on Implementation
82	West Palm Beach	Hollywood Pl/Monroe Dr(1)	Parker	Dixie	restriping and signage	13,000	101	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
6	Boca Raton	El Rio Trail	Clint Moore	Congress	Add multi-use path	91,520	24	City Proposed Improvement	Boca Raton	Meet with agency(s) on Implementation
14	Delray Beach	Multi-Use Path	SW 10th Street	Atlantic Ave	Construct Multi-Use Path	228,800	25	New Proposed Improvement	SFRTA, FDOT, Palm Beach County, Delray Beach	Research and Establish Rails-with-Trails Policy
64	Lake Worth	SE Station Connector(1)	Station	6th Ave South	Add sidewalks and routing	62,400	37	City Proposed Improvement	Lake Worth, SFRTA, Lake Worth CRA	Meet with agency(s) on Implementation/ Prioritize Project
15	Delray Beach	Atlantic Ave	SFCR Tracks	12th Ave	widen road to add bike lanes	91,520	49	New Proposed Improvement	FDOT, Palm Beach County, Delray Beach	Meet with agency(s) on Implementation
16	Delray Beach	12th Ave	NW 2nd St	SW 2nd St	widen road to add bike lanes	114,400	50	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
17	Delray Beach	SW 2nd Street	SW 12th Ave	Federal Hwy	widen road to add bike lanes	251,680	51	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
53	Lake Worth	12th Ave South	Lake Osbourne Dr	S Federal Hwy	widen road to add bike lanes	274,560	52	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
18	Delray Beach	Lowson Rd / SW 10th Street	Congress	SE 5th Ave	widen road to add bike lanes and / or reconfigure available pavements	343,200	63	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
19	Delray Beach	Lowson Rd	Military	Congress	widen road to add bike lanes	434,720	64	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
20	Delray Beach	Lowson Rd	Military	Congress	Bridge widening	84,500	65	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
21	Delray Beach	NW 2nd Street	NW 12th Ave	Federal Hwy	widen road to add bike lanes	251,680	66	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
22	Delray Beach	Homewood Blvd	Linton	Lowson	reconfigure roadway and restripe to add bike lanes	10,400	67	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
23	Delray Beach	Homewood Blvd	Germantown	Linton	widen road to add bike lanes	68,640	68	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
54	Lake Worth	Boutwell Rd	2nd Ave North	10th Ave N	widen road to add bike lanes	137,280	69	City Proposed Improvement	Lake Worth, Lake Worth CRA, FDOT	Meet with agency(s) on Implementation
55	Lake Worth	2nd Ave North	Davis	Boutwell	reconfigure roadway and restripe to add bike lanes	320,320	70	New Proposed Improvement	Lake Worth, Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
56A	Lake Worth	Davis	Lake Worth Rd	Alemeda Dr	widen road to add bike lanes	388,960	71	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
56B	Lake Worth	Davis	Lake Worth Rd	Alemeda Dr	Canal crossings	21,840	71	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
58	Lake Worth	Lakwood	Davis	Haverhill	widen road to add bike lanes	343,200	72	New Proposed Improvement	Palm Beach County, Palm Springs, Greenacres	Meet with agency(s) on Implementation
57A	Lake Worth	Kirk	Melaleuca	Park Ln	widen road to add bike lanes	457,600	73	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
57B	Lake Worth	Kirk	Melaleuca	Park Ln	Canal crossings	21,840	73	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
90A	Mangonia Park	North Shore Dr	45th St	Echo Lake Dr	widen, add striping	137,280	74	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
90B	Mangonia Park	North Shore Dr	45th St	Echo Lake Dr	Widen bridge	114,400	74	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
91	Mangonia Park	39th St	N Shore Dr	Australian	widen, add striping	32,032	75	West Palm Beach Proposed Improvement	West Palm Beach, Mangonia Park	Meet with agency(s) on Implementation
92	Mangonia Park	Australian	36th St	39th St	widen, add striping	32,032	76	West Palm Beach Proposed Improvement	West Palm Beach, Palm Beach, County	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
93A	Mangonia Park	36th Street	Austrialian	Pointsettia Ave	restriping and signage	57,200	77	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
93B	Mangonia Park	36th Street	Austrialian	Pointsettia Ave	Bridge	93,600	77	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
102	Mangonia Park	North Shore Dr	0.15 Mi south of 45th St		narrow lanes on bridge and widen sidewalks	15,600	78	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
24	Delray Beach	Germantown	Linton	Homewood	widen road to add bike lanes	183,040	80	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
25	Delray Beach	NW 4th Ave	Linton	Lake Ida	widen road to add bike lanes	526,240	81	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
26	Delray Beach	SW 10th Ave	SW 10th St	Lindell	widen road to add bike lanes and / or reconfigure available pavement	183,040	82	New Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
27	Delray Beach	Lindell Blvd	SW 10th Ave	Dixie Hwy	widen road to add bike lanes	228,800	83	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
28	Delray Beach	Carl Bolter Dr	Lindell Blvd	County Club Dr	widen road to add bike lanes	91,520	84	New Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
38	Boynton Beach	Miner Rd	Congress	High Ridge	widen road to add bike lanes	228,800	85	New Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
39	Boynton Beach	Miner Rd	Lawrence	Congress	widen, add striping, widen bridge	228,800	86	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
40	Boynton Beach	Miner Rd	Military	Lawrence	widen, add striping	137,280	87	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
59	Lake Worth	High Ridge	Lake Osbourne Dr	Hypoluxo Rd	widen road to add bike lanes	434,720	88	City Proposed Improvement	Lake Worth, Hypoluxo, Palm Beach County, Lantana	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
60	Lake Worth	FEC Rails with Trails	All of Lake Worth		Add Multi-Use Path	1,372,800	89	FDOT Proposed Improvement	FDOT	none
61	Lake Worth	Barton/Andrew Redding Rd	12th Ave S	Lantana Rd	widen road to add bike lanes	251,680	90	City Proposed Improvement	Lake Worth, Lantana	Meet with agency(s) on Implementation
65	Lake Worth	Boutwell Rd	2nd Ave North	10th Ave North	Sidewalk	93,600	91	FDOT Proposed Improvement	FDOT, Lake Worth	Meet with agency(s) on Implementation
83	West Palm Beach	Southern Blvd	Parker	Lake	widen road to add bike lanes	100,425	92	City Proposed Improvement	West Palm Beach, Palm Beach County,	Meet with agency(s) on Implementation
31	Delray Beach	SW 10 Street	FEC Rail Crossing		Install sidewalk and rail crossing on north side of road	130,000	93	New Proposed Improvement	FEC, FDOT, Palm Beach County, Delray Beach	Meet with agency(s) on Implementation
32A	Delray Beach	SW 10 Street / Lowson Blvd	Canal	Dover Road	Install sidewalk on north side of road	93,600	94	New Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
32B	Delray Beach	SW 10 Street / Lowson Blvd	Canal	Dover Road	Bridge widening	42,250	94	New Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
7	Boca Raton	NW 20th St	W. of NW 4th Ave		Widen Bridge to add bike lanes	130,000	97	New Proposed Improvement	Boca Raton, FAU	Meet with agency(s) on Implementation
94	Mangonia Park	Windsor Ave	Service	45th St	restriping and signage	11,700	98	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
95	Mangonia Park	Echo Lake Dr	Village Blvd	N Shore Dr	widen, add striping, bridge over I-95	2,340,000	99	West Palm Beach Proposed Improvement	West Palm Beach, Palm Beach County, FDOT	Meet with agency(s) on Implementation
5	Boca Raton	FAU Blvd	NW 28th St	Spanish River Blvd	widen road to add bike lanes, requires removal of curbs, alternative is bicycle boulevard	160,160	100	New Proposed Improvement	FAU, PBCC, Boca Raton	Meet with agency(s) on Implementation
96	Mangonia Park	Shaker Way	Village Blvd	Haverhill	New Multi-Use Path	366,080	102	West Palm Beach Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

The pedestrian routing plans are estimated to cost $1,200,000 to implement at all six stations. The improvements do not need to occur at one time, but can be phased in over time as funding becomes available. All of the stations are accessed by pedestrian facilities (primarily sidewalks) along nearly all facilities proximate to the stations. The bicycle routing was much more difficult to accomplish because of the limited amount of dedicated bicycle facilities and the limited amount of bicycle planning that has occurred. The bicycle routing plan requires an estimated $11,100,000 to implement all of the bicycle network improvements. Completion of the bicycle routing network is feasible, but will require significant investment in bicycle facilities and cooperation amongst all of the agencies, including:

- Local Governments
- Palm Beach County Government
- Palm Beach County MPO
- Community Redevelopment Agencies
- Florida Department of Transportation
- Railroad Agencies/Corporations

Installation of bicycle and pedestrian facilities may not be feasible on all roads unless significant reprioritization of needs (e.g. – lane reductions to install bicycle lanes) occurs to support bicycling. Construction of off-street facilities within rights-of-way operated by utilities (e.g. - FP&L), water management districts (e.g. - Lake Worth Drainage District), and railroads (e.g. FDOT, CSX, FEC) need to be explored to expand bicycle and pedestrian access proximate to the Stations, especially where facilities do not exist, cannot fit within existing right-of-way, or cannot provide adequate access. There are several instances where multi-use paths appear feasible within railroad or canal rights-of-way that can provide bicycle and pedestrian access to the Stations that does not exist today and cannot otherwise be provided.

The following actions are recommended by SFRTA

1. Begin implementation of the Short-Term SFRTA improvements
2. Meet with other implementing agencies to review the projects, identify responsibility, project priority, and encourage implementation of projects proximate to the stations.
3. Research the feasibility of multi-use paths adjacent to rail lines (rails-with-trails) and establish a policy for implementation
4. Encourage discussions with the Lake Worth Drainage District to allow for multi-use paths with District rights-of-way
5. Upon establishing policy that allows multi-use paths adjacent to rail line (3.) and canals (4.), revisit the projects and priorities to determine if multi-use paths are needed and recommended.

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APPENDICES

LIST OF EXHIBITS

INTRODUCTION

The South Florida Regional Transportation Authority (SFRTA) supports multimodal access to its Tri-Rail stations. This is demonstrated by SFRTA's upcoming installation of bicycle lockers at its Tri-Rail stations and interest in providing safe pedestrian and bicycle routes to Tri-Rail stations. The following plan proposes the best routes between bicycle and pedestrian generators and the six Palm Beach County Tri-Rail Stations. The routing plans attempt to minimize the risk to pedestrians and bicyclists and provide the shortest travel time between the Stations and the attractions/generators. In order to facilitate the routing, prototypical signage were developed for bicycle and pedestrian routing. In the event that the shortest and best route is inadequate for pedestrian and/or bicycle use, improvements to the route will be recommended for implementation. The end result routing plans and improvements will be a much safer and more efficient pedestrian and bicycle network to the Stations that will ideally increase ridership via pedestrian and bicycle modes.

GOALS AND OBJECTIVES

The goal of the pedestrian and bicycle routing plan is increased travel to Tri-Rail stations via cycling and walking. The resulting objectives relating to that goal and this plan are as follows:

- Identify existing pedestrian facilities
- Identify existing cycling facilities
- Locate and review existing local government pedestrian and bicycle plans
- Identify pedestrian and cycling productions / attractions proximate to the stations
- Identify pedestrian routes to the stations
- Identify cycling routes to the stations
- Identify pedestrian and bicycle facilities gaps in the infrastructure
- Estimate the cost of each infrastructure gap
- Develop routing signage concepts

FACILITY DESCRIPTIONS

Bicycle Facilities

Five types of bicycle facilities are identified in most bicycle network plans, including:

- On-street designated bicycle lanes
- On-street curb lanes
- Bicycle Boulevards with *Sharrow Markings*, *Share the Road* and *Bike Route* Signs
- Shared right-of-way with *Share the Road* and *Bike Route* Signs
- Off-street recreational bicycle or multi-use paths

On-street Designated Bicycle Lanes

A designated bicycle lane is a portion of the roadway designated by striping, signing and/or special pavement markings for the exclusive use of bicyclists. The Florida Department of Transportation's (FDOT) 2010 Plans Preparation Manual specifies the minimum standards for designated bicycle facilities. On roadways with flush shoulders, a minimum of a five foot paved shoulder should be provided for a designated bicycle lane. On curb and gutter roadways, four feet of width measured from the lip of the gutter is required. Where parking is present, the bike lane should be placed between the parking lane and the travel lane and have a minimum width of five feet. Some communities choose to color bicycle lanes to provide additional definition of the space dedicated for bicycles. Designated bicycle lanes are marked with bicycle lane signs and/or special pavement markings and incorporate signage to designate them as bicycle routes.

On-street Curb Lanes

A curb bicycle lane or a paved shoulder is separated from traffic lanes by an edge stripe, but does not include bicycle lane signs and/or special pavement markings because the curb lane does not satisfy all of the criteria (usually width) for an on-street designated bicycle lane.

Bicycle Boulevards with Sharrow Markings, Share the Road, and Bike Route Signs

Bicycle Boulevards are typically located on low- to mid-volume collector roadways where there is not proper right-of-way or pavement width to create bicycle lanes. The roadway has enough traffic volume and high enough speeds to necessitate some sort of facility to encourage bicyclists and automobiles to share the road. Bicycle Boulevards send a clear signal to motorists that bicyclists are not only going to be on the road, but that they are part of the mix of vehicles. Bicycle Boulevards are often combined with traffic calming improvements. Wayfinding signs and guide signs can also be included on Bicycle Boulevards to clearly indicate destinations and attractions that can be reached by bicycle.

Bicycle Boulevard facilities may also include the shared lane marking (Sharrow) as long as posted speeds do not exceed 35 miles per hour, along with "Share the Road" signs. The word "sharrow" is a combination of two words – "share" and "arrow". Sharrows are identified by a stencil of a bike under what looks like two inverted "V"s, or chevrons. The chevrons indicate the direction of travel (always with traffic). "Sharrow" markings are painted far enough out in the lane so as to move cyclists out of the "door zone", thus reducing the chance that cyclists will be "doored" by motorists who do not check for cyclists before opening their doors into traffic. Additionally, studies have shown that sharrows act as a form of traffic calming by subtly encouraging motorists to reduce their speed on roads with the markings. Exhibit 1 shows the sharrow marking.

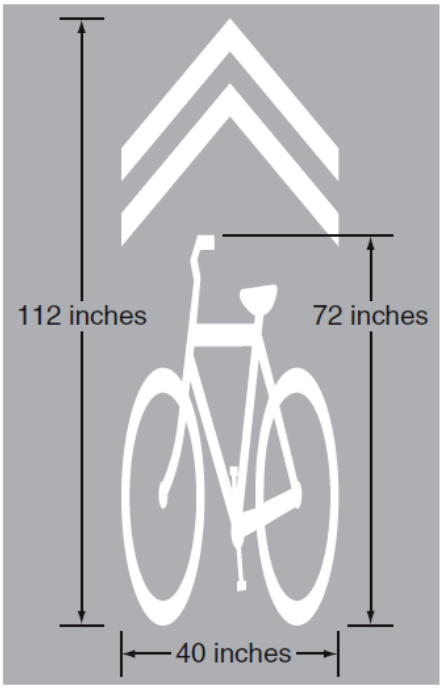


Exhibit 1. Shared Lane Marking (Sharrow)

Shared right-of-way with Share the Road and Bike Route Signs

These facilities exist on roadways that do not have adequate right-of-way to install dedicated bicycle lanes or a do not meet the requirements for "Sharrow" marking, but are still critical corridors for bicycling. The Share the Road and Bike Route signs send a clear signal to motorists that bicyclists are not only going to be on the road, but that they are part of the mix of vehicles. The signs shall be placed at regular intervals so it is clearly visible to all users of the roadway. It also is important to remind drivers that according to State Statute, bicyclists are legal users of all roadways (except limited-access freeway-type facilities).

Off-street multi-use paths

This type of facility is located independent of vehicular roadways and should be a minimum of 12 feet wide to accommodate all users. Multi-use paths have been successfully co-located with other infrastructure, including trains (rails-with-trails) and drainage canals.

Pedestrian Facilities

Pedestrian facility is a general term denoting improvements and provisions made to accommodate or encourage walking. Typical pedestrian facilities include:

- Sidewalks
- Crosswalks
- Multi-Use Paths
- Pedestrian Refuge Islands

Sidewalks

A sidewalk is the portion of a street between the curb line and the adjacent property line that is paved or improved and intended for use by pedestrians. FDOT requirements in urban areas are for sidewalks five feet wide on both sides of the road. If the sidewalk is adjacent to the curb, six foot sidewalks are required.

Crosswalks

Crosswalks are any portion of a roadway at an intersection or elsewhere that distinctly indicate a pedestrian crossing by pavement marking lines on the surface, which may be supplemented by contrasting pavement texture, style, or color and signage.

Multi-Use Path

A pathway outside the traveled way and physically separated from motorized vehicular traffic by an open space or barrier and often on a separate alignment from nearby roadways. Multi-use (shared-use) paths are used by pedestrians (including skaters, users of manual and motorized wheelchairs, and joggers) and other authorized motorized and non-motorized users. Shared-use paths are recommended to be a minimum width of 12 feet.

Pedestrian Refuge Island

These are raised islands or medians of sufficient width that are placed in the center area of a street or highway that can serve as a place of refuge for pedestrians attempting to cross at a midblock or intersection location. Center islands or medians allow pedestrians to find an adequate gap in one direction of traffic at a time. The pedestrians are able to stop, if necessary, in the center island or median area and wait for an adequate gap in the other direction of traffic before crossing the second half of the street or highway. The minimum widths for accessible refuge islands and for design and placement of detectable warning surfaces are provided in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.11).

EXISTING CONDITIONS AND PLANS

Data Collection

Preliminary data regarding availability of pedestrian and bicycle facilities was collected via aerial photography. Meetings and/or conversations were held with the following agencies to discuss past and present pedestrian and bicycle planning efforts, plans, and generators and attractors proximate to the stations:

- Palm Beach County MPO
- City of Boca Raton
- City of Delray Beach
- City of Boynton Beach
- City of Lake Worth
- City of West Palm Beach
- Town of Mangonia Park

Once the data were collected and mapped, field visits were performed at each of the six Palm Beach County Tri-Rail Stations to perform the following:

- Confirm aerial observations of facilities
- Identify pedestrian and bicycle generators
- Review potential routes
- Qualitatively evaluate facilities
- Measure facilities
- Gather additional data for inclusion into the report

Bicycle facilities and municipal bicycle and pedestrian plans are contained within a map series in Appendix A.

Local Government Plans

Palm Beach County MPO

Palm Beach County MPO is creating a bicycle master plan for the County. The MPO is in the data collection stages of the project and does not have information available for input into the project.

City of Boca Raton

Boca Raton has an extensive existing and planned pedestrian and bicycle network. The City shared their Bicycle, Pedestrian, Greenway & Trails Master Plan, Existing Bicycle Pedestrian Facilities Map (2004), and Bicycle Suitability Map. The Boca Raton Tri-Rail Station is surrounded by employment generators to the west and north, population centers to the east and the co-located Palm Beach Community College and Florida Atlantic University Campuses to the south.

City of Delray Beach

The City developed a Bicycle and Pedestrian Master Plan. Delray Beach made extensive improvements to their existing pedestrian network east of I-95, consistent with the Plan. The area surrounding the Station has limited bicycle facilities and none that provide access to the station. The Delray Beach Tri-Rail Station is surrounded immediately by a Palm Beach County Government Center that includes offices of the Tax Collector, Property Appraiser, Sherriff's Office, Planning and Zoning, and Southeast County Delray Beach Public Health Unit.

City of Boynton Beach

The City developed its Conceptual Parks and Recreation System Map, which specifies locations for tree line bikeways and greenways. Sidewalks exist on almost all major facilities proximate to the station. Bicycle facilities are limited near the Station, and none exist to the site. The Children's Services Council of Palm Beach County is co-located with the Tri-Rail Station.

City of Lake Worth

The City adopted its Bicycle Network Map in June 2010. Sidewalks exist on almost all major facilities near of the station. Bicycle and pedestrian facilities directly access the site on Lake Worth Road and extend east into the downtown and west to Palm Beach Community College. Significant population centers exist northeast, southeast, and southwest of the station, employment exists north of station, and John Prince

Park and Palm Beach Community College are located west of the station.

City of West Palm Beach

The City has an Existing & Future (Year 2018) Bikeways map within their comprehensive plan showing existing and proposed bicycle facilities. Sidewalks exist on almost all major facilities within proximity of the station. Pedestrian facilities directly access the site on Banyan Boulevard and Tamarind Avenue. The City has numerous specific generators including the Palm Beach County Courthouse, Alexander W Dreyfoos Junior School of the Arts, Kravis Center for Performing Arts, Cityplace, the waterfront (which hosts numerous special events), City Hall, Palm Beach Convention Center, U.S. Government buildings, and Palm Beach Atlantic University. Additionally, significant employment exists in the downtown area to the east, and significant population centers are located farther north and south of the Station.

Town of Mangonia Park

The Town does not have a specific a bicycle or pedestrian facilities plan. The Town does have separate developer commitments to improve access to the Tri-Rail Station from 45th Street and construct a pathway from the Station to the northwest. The station is accessed by pedestrian facilities via 45th Street. No bicycle facilities exist to the Station. The Station is co-located with a dormant Jai-Alai facility.

POTENTIAL FACILITY OPPORTUNITIES

Numerous planned pedestrian and bicycle facilities are yet to be constructed around many of the Tri-Rail stations. However, even with construction of the planned facilities, which may take decades to complete, many of the plans will not adequately address access and circulation of pedestrians and bicyclists within proximity to the Palm Beach County Tri-Rail Stations. One of the greatest limitations and difficulties in building new pedestrian and bicycle facilities is availability of right-of-way. Three major linear elements are present adjacent to or near all six Tri-Rail Stations: canals, railroad tracks, and power lines. Multi-Use trails have been successfully co-located within rights of way all three. The Florida East Coast (FEC) rail line is being studied for rails with trails opportunities. Further, there are at least 140 rail-with-trails and 1,400 miles of rail-with-trails in the Country. Trails co-located with canals and other major water bodies are too numerous to count. One such example in Palm Beach County is the El Rio Trail in Boca Raton.

Bus and train bicycle storage capacity are two opportunities that need to be considered for expansion related to increasing bicycle and pedestrian accessibility at Tri-Rail stations. A significant number of busses that were equipped to carry bicycles, had bicycles. Further, many bicyclists require their bicycle at both ends of a Tri-Rail trip. Based on discussions with SFRTA and MPO staff, capacity for bicycles on Tri-Rail is limited, which may be limiting ridership. Expansion of capacity for bicycles should be further explored.

Rail-with-Trails

Rails-with-trails are trails adjacent to or within an active railroad corridor. The rails-with-trails concept provides even more opportunities for the creation of trail systems that enhance local transportation systems, offering safe, attractive community connections. Rails-with-trails can also provide a solution for rail companies and local governments concerned about safety risks posed by those who illegally cross rail lines. By providing a safe, attractive alternative for cyclists and pedestrians, often

with fencing between the pathway and the railway, rails-with-trails can eliminate the previous incentive to use the tracks as a shortcut.

Currently, there are more than 140 rails-with-trails in the United States, totaling more than 1,400 miles, and more are being built each year. One of the key issues to be resolved when developing a trail is insurance and liability. The Rails to Trails Conservancy and Federal Highway Administration (FHWA) have both completed comprehensive analyses and reports documenting rails-with-trails.

A trail adjacent to the rail line would be greatly increase pedestrian and bicycle connectivity and appears feasible within the existing right-of-way at the Delray Beach, Boynton Beach, Lake Worth, and Mangonia Park Stations. All of the stations have significant challenges related to bicycle access. Further, these stations have significant challenges related to north-south bicycle travel from the station and improvements to existing bicycle infrastructure is not programmed in any five-year plans. Providing an excellent north-south route from the stations would then enable better access to many of the east-west routes within the study area where some bicycle facilities exist. This improvement in bicycle connectivity would greatly enhance the bicycle network to and from the stations. Additional investigation should be pursued to determine the feasibility of rails-with-trails within or adjacent to the existing rail right-of-way.

Canal Trails

Canal trails are adjacent to or within a canal right-of-way. Canal trails provide even more opportunities for the creation of trail systems that enhance local transportation systems, offering safe, attractive community connections. Canal traverse both east-west and north-south routes within Palm Beach County. Canals may offer a significant opportunity for co-located trails where sufficient rights-of-way do not exist for on-street bicycle facilities. Delray Beach, Boynton Beach, and Boca Raton have constructed or have plans for canal trails. Significant potential east-west and north-south canals exist in Boca Raton, Delray Beach, Boynton Beach, and Lake Worth that would provide connectivity to those stations. Liability and insurance

issues and maintenance access are two of the key concerns for the maintaining agencies. Additional investigation should be pursued to determine the feasibility of canal trails within or adjacent to canal rights-of-way.

Trails within Utility Corridors

Numerous multi-use facilities have been located within powerline rights-of-way throughout Florida and the Country. These rights-of-way are typically underutilized parcels of land. One notable right-of-way exists north of the Mangonia Park Station that could potentially facilitate east-west travel to the station. Additional investigation should be pursued to determine the feasibility of trails within or adjacent to the powerline right-of-way.

SIGNING

Route signing is planned along the desired pedestrian and bicycle routes to encourage walking and bicycling to the stations.

Signing Requirements

The Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for all traffic control devices (signs, signals, markings) installed on any street, highway, bikeway, or private road open to public travel. Therefore, the signs developed for this routing plan follow the MUTCD. The guidance in the MUTCD for pedestrian and bicycle wayfinding is as follows:

Because pedestrian wayfinding signs typically use smaller legends that are inadequately sized for viewing by vehicular traffic and because they can provide direction to pedestrians that might conflict with that appropriate for vehicular traffic, wayfinding signs designed for and intended to provide direction to pedestrians or other users of a sidewalk or other roadside area should be located to minimize their conspicuity to vehicular traffic. Such signs should be located as far as practical from the street, such as at the far edge of the sidewalk. Where locating such signs farther from the roadway is not practical, the pedestrian wayfinding signs should have their conspicuity to vehicular traffic minimized by employing one or a combination of the following methods:

A. Locating signs away from intersections where high-priority traffic control devices are present.

B. Facing the pedestrian message toward the sidewalk and away from the street.

C. Cantilevering the sign over the sidewalk if the pedestrian wayfinding sign is mounted at a height consistent with vehicular traffic signs, removing the pedestrian wayfinding signs from the line of sight in a sequence of vehicular signs. To further minimize their conspicuity to vehicular traffic during nighttime conditions, pedestrian wayfinding signs should not be retroreflective.

Sign Concepts

The sign alternatives developed for this effort utilize two different basic sign meanings/coloring:

- Direction Guidance (green background)
- Information (blue background)

The information presented on the signs are various allowed combinations of the following:

- Words
    - Destinations
    - Bike route designation
    - Tri Rail
- Symbology
    - Directional arrows
    - Tri Rail
    - Train
    - Pedestrian
    - Bicycle
- Numbers to describe distances in miles
- Optional Enhancement markers to denote Tri-Rail route signage

The varying signs presented meet the MUTCD criteria for signage in coloring, size, and information presented. Three of the primary options are displayed as Exhibits 2, 3, and 4.

Exhibit 2. Routing Option 1

Exhibit 3. Routing Option 2

Exhibit 4. Routing Option 3

The opinion of probable cost for each general sign were estimated based on available data. The opinion of probably cost for each sign, including post assembly, is as follows:

- Option 1 - $100
- Option 2 - $75
- Option 3 without enhancement marker - $100
- Option 3 with enhancement marker - $200

The optional enhancement marker adds significant expense to the sign costs, but also adds significant branding of Tri Rail to enhance its visibility along the routes. The enhancement marker need not be attached to every routing sign, but could be used at important routing locations.

All three signs offer the ability for expansion or combination with other local government routing plans.

It is our recommendation that Tri-Rail utilize the Option 3 signage concept to allow for the optional enhancement marker. Additional signs are contained in Appendix B.

Other Route Markings

In addition to the routing signage, pavement markings could be considered on bicycle facilities, pedestrian facilities, and multi-use trails to convey routing. Pavement markings should be of a non-slip material and follow MUTCD marking requirements.

ROUTING

The routing section is divided by station and includes a presentation of local plans, review of existing facilities, and then presents the proposed routes and route improvements. After the discussion of the routes and improvements by station, the improvements are further discussed.

Routing was examined from the Stations to specific generators and to general areas of employment and population. General guidance is that pedestrians are comfortable walking about ¼ mile. Guidance available regarding bicycling indicates that bicyclists are comfortable biking up 3 miles. The routing distances chosen for this application were a minimum of ¼ mile for pedestrians and up to three miles for bicyclists. Further, there are concerns regarding routing pedestrians or bicyclists onto a route without dedicated facilities for that mode of transportation. Based on discussions with the project team, it was decided that this effort would not route pedestrians or bicyclists to facilities that do not have dedicated facilities. The result of this decision is that routing may not be possible to some potential generators because routes do not exist, are not planned and cannot be accommodated within existing rights-of-way.

If facilities are in need of repair or not present and right-of-way exists, these were identified as a needed pedestrian or bicycle project.

The combination of these two decisions yields the following results:

- Few pedestrian improvement project needs are identified because of the small routing radius and because sidewalks are present on at least one side of the road in almost all locations
- A significant number of bicycle improvement needs are identified because of there are very few dedicated bicycle facilities and because the routing area is relatively large

The improvements identified are intended to be accomplished within the existing right-of-way. Determinations of feasibility of the projects are based on general civil engineering knowledge, FDOT design requirements and available right-of-way based on data from the Palm Beach County Property Appraiser website.

The maps show each station's recommended bicycle and pedestrian routes and highlight the identified generators proximate to the station.

Boca Raton Routing and Projects

The Boca Raton Tri-Rail Station offers the most immediate routing opportunities because of the existing bicycle and pedestrian network. The City's *Bicycle, Pedestrian, Greenway & Trails Master Plan* is shown is Exhibit 5 and the City's *Existing Bicycle Pedestrian Facilities Map (2004)* is shown in Exhibit 6. The City's *Bicycle Suitability Map* is shown in Exhibit 7 and a map of existing bicycle facilities is shown in Exhibit 8.

The Station is located at the southwest corner of Yamato Road and I-95. Yamato Road traverses an east-west route and has dedicated bicycle and pedestrian facilities within the study area. The El Rio Trail is a multi-use trail that traverses a north-south alignment. These two facilities provide excellent north-south and east-west access to the Tri-Rail station. Additionally, Spanish River Boulevard has dedicated pedestrian and bicycle facilities that aid in east-west travel. The primary pedestrian and bicycle generators proximate to the Station are as follows:

- T-Rex Corporate Park – Employment Generator – 0.4 miles west
- Arvida Park of Commerce – Employment Generator – 0.1-1.5 miles north and northwest
- Palm Beach Community College – School Generator – 1.0 mile south
- Florida Atlantic University – School Generator – 1.5 miles south

Additional employment and residential uses exist within the study area in all directions, but none are clear pedestrian and bicycle generators.

Exhibit 5. Boca Raton Bicycle, Pedestrian, Greenway & Trails Master Plan

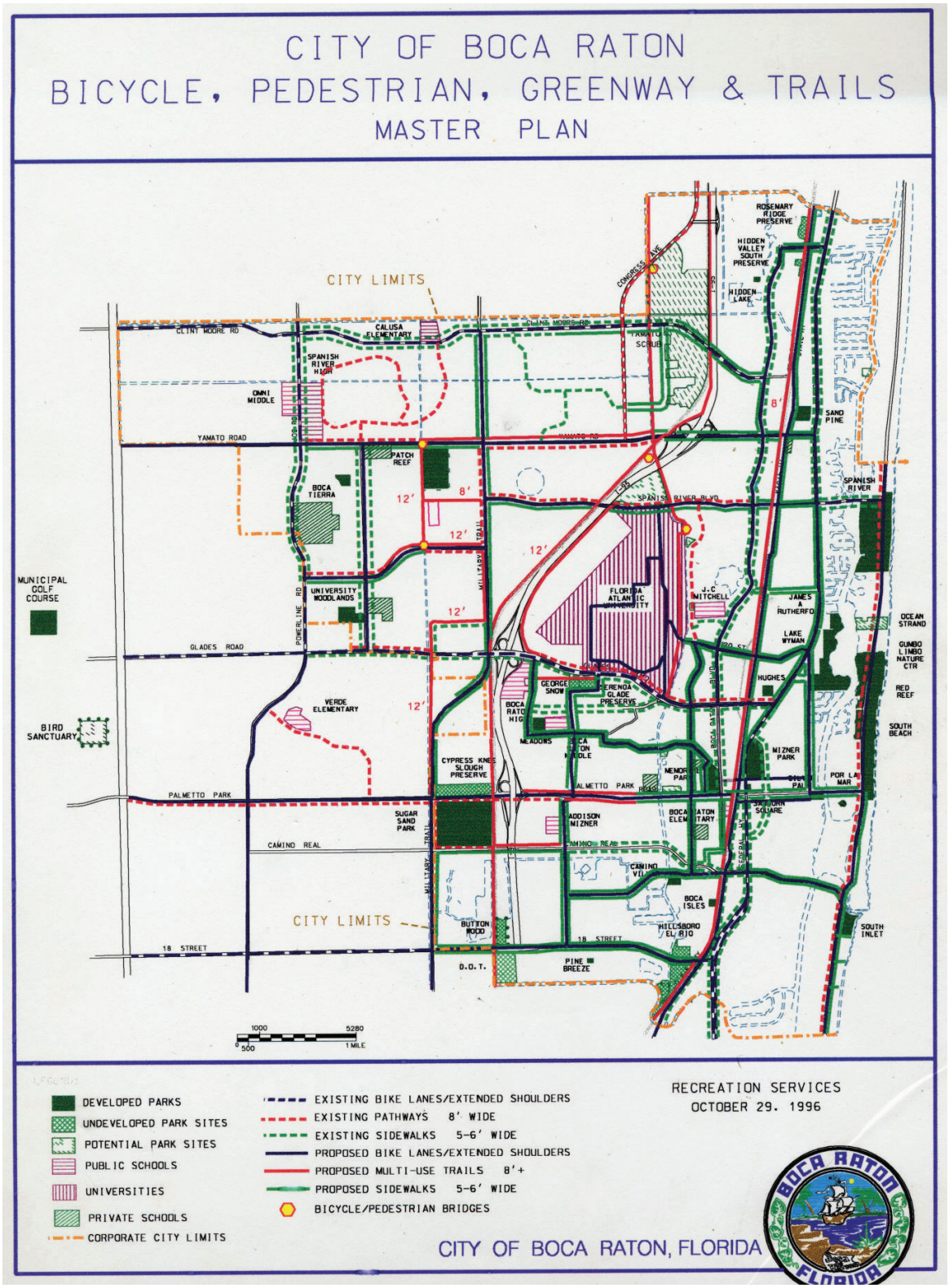
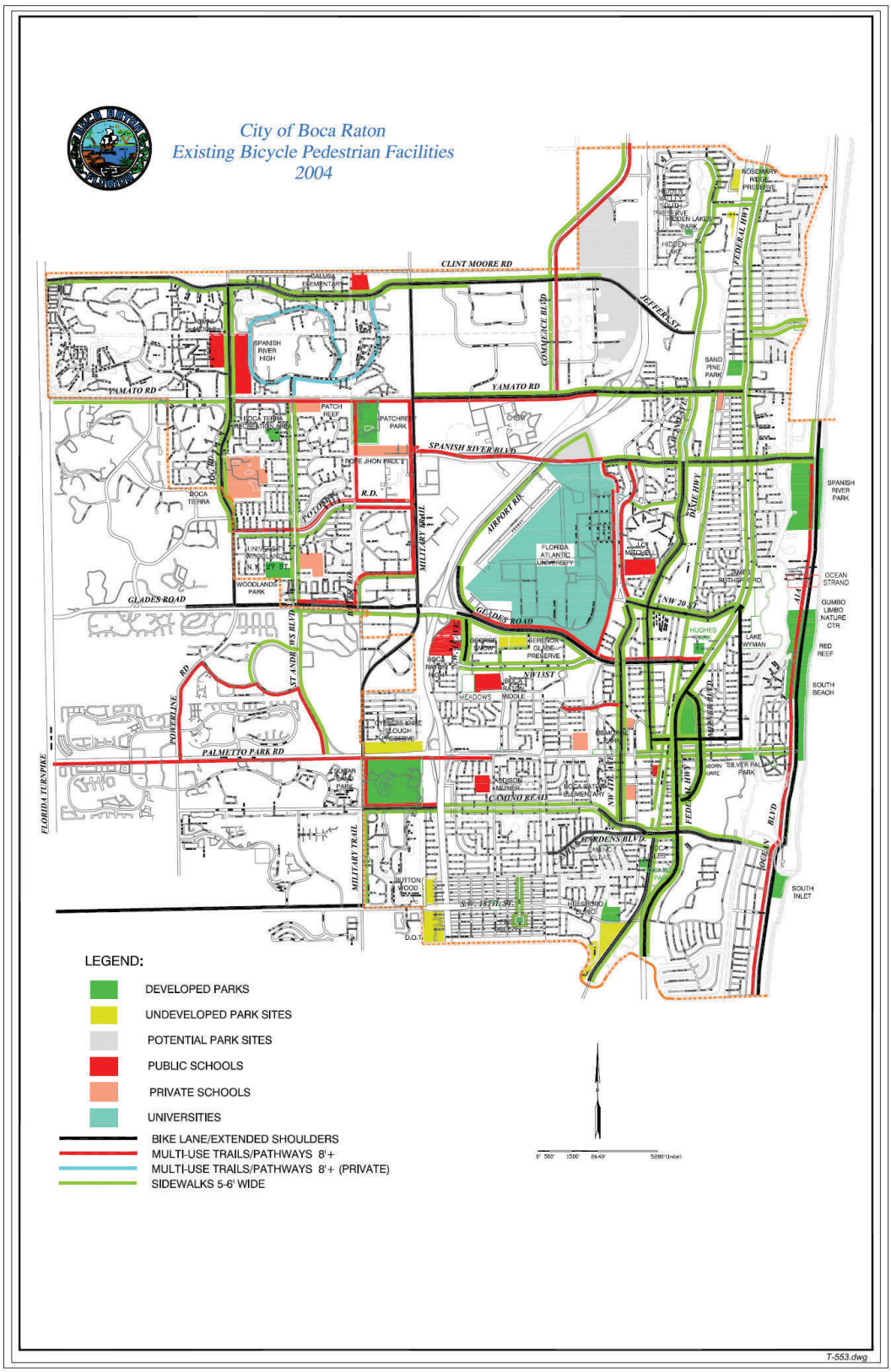


Exhibit 6. Boca Raton Existing Bicycle Pedestrian Facilities Map (2004)



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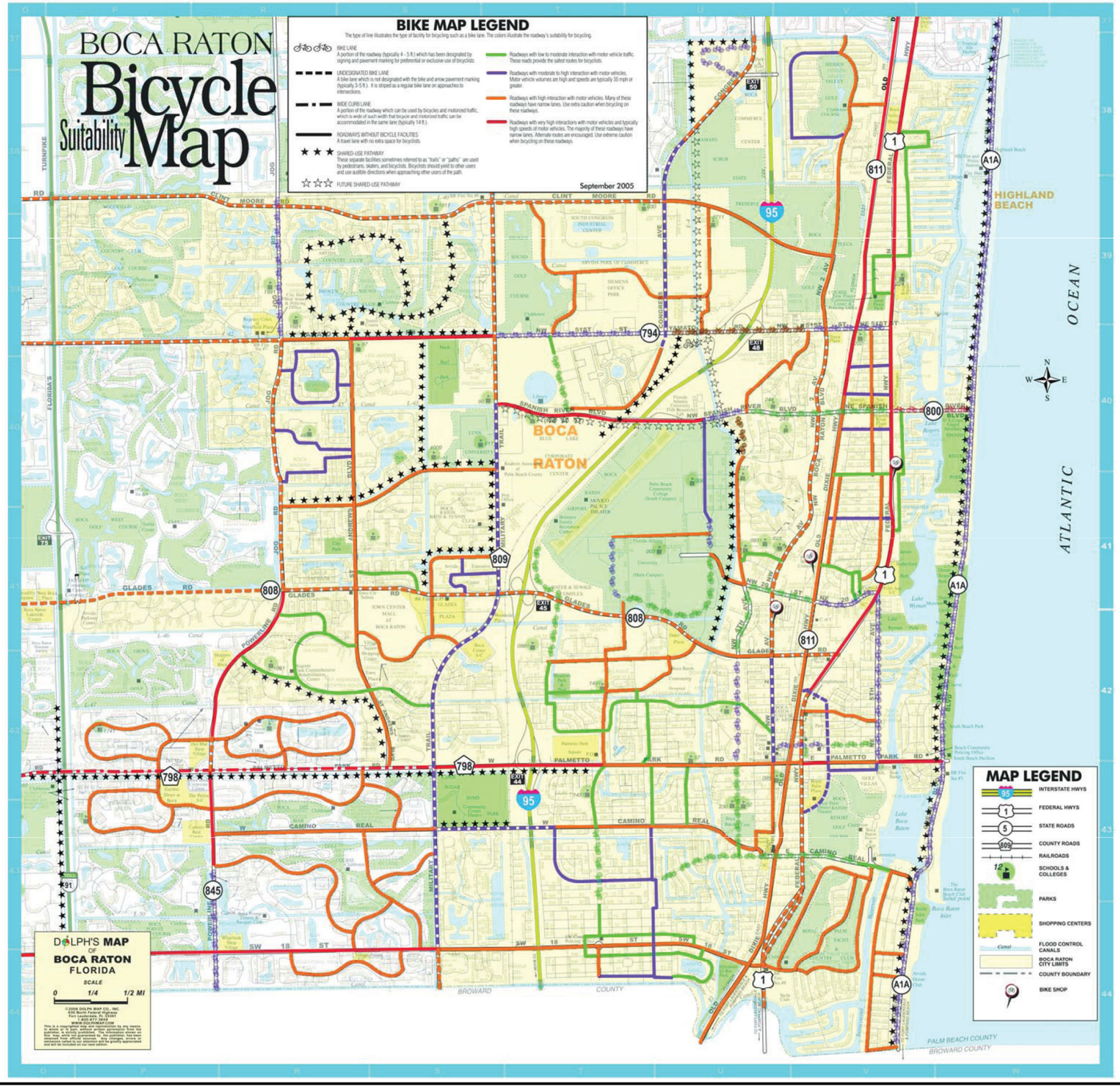

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EXHIBIT 7

Boca Raton
Bicycle Suitability
Map

MacKenzie
Engineering & Planning, Inc.

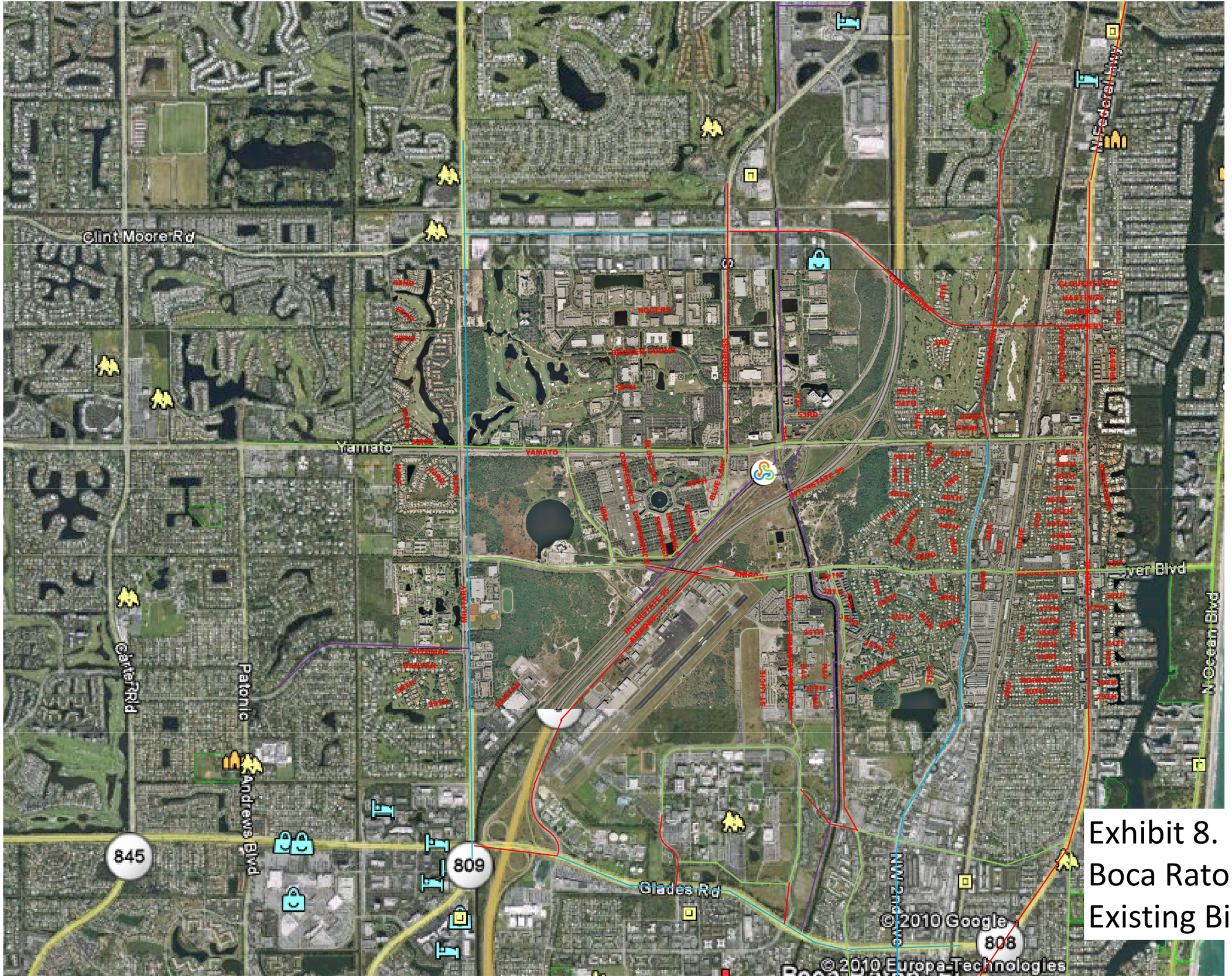

Exhibit 8.
Boca Raton
Existing Bicycle Facilities

A total of four pedestrian and seven bicycle improvement projects were identified. Most of the projects are related to connectivity to the El Rio Trail. A dedicated pedestrian and bicycle signal at the intersection of the El Rio Trail and Yamato Road is recommended to achieve connectivity and safely move pedestrians and cyclists easily and directly across Yamato Road. The next priorities are the route signage for bicycles and pedestrians. Following that are connectivity improvements between the El Rio Trail and the Palm Beach Community College and FAU campuses at NW 32nd Street, NW 28th Street, and a connection to the bicycle lanes on NW 20th Street. A listing of the improvement projects is shown in Exhibit 9, the pedestrian routing is shown in Exhibit 10 and the bicycle routing plan is shown in Exhibit 11.

Exhibit 9. Boca Raton Facility Improvement Needs

Boca Raton Bicycle Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	**Cost Opinion ($)**
SHORT TERM						
1	Yamato Road	@ El Rio Trail		1	Bicycle / Pedestrian signal	$ 117,000
2	Over all routing	Boca Raton Area		43	Bicycle Signage	$ 11,180
MEDIUM TERM						
3	NW 32nd Street	PBCC	El Rio Trail	0.3	widen road to add bike lanes	$ 68,640
4	NW 28th Street	FAU Blvd	El Rio Trail	0.2	widen road to add bike lanes	$ 45,760
LONG TERM						
5	FAU Blvd	NW 28th St	Spanish River Blvd	0.7	widen road to add bike lanes, requires removal of curbs, alternative is bicycle boulevard	$ 160,160
6	El Rio Trail	Clint Moore	Congress	0.4	Add multi-use path	$ 91,520
7	NW 20th St	W. of NW 4th Ave		1000	Widen Bridge to add bike lanes	$ 130,000
						$ 624,260

Boca Raton Pedestrian Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	**Cost Opinion ($)**
SHORT TERM						
8	Over all routing	Boca Raton Area		8	Pedestrian Signage	$ 2,080
9	Yamato Road	@ El Rio Trail		1	Bicycle / Pedestrian signal	$ 117,000
MEDIUM TERM						
10	FAU Blvd	NW 35th Street	Florida Atlantic Blvd	0.8	Add Sidewalk on West Side and connections to PBCC Campus	$ 124,800
11	NW 28th Street	FAU Blvd	El Rio Trail	0.2	Add Sidewalk	$ 31,200
						$ 275,080

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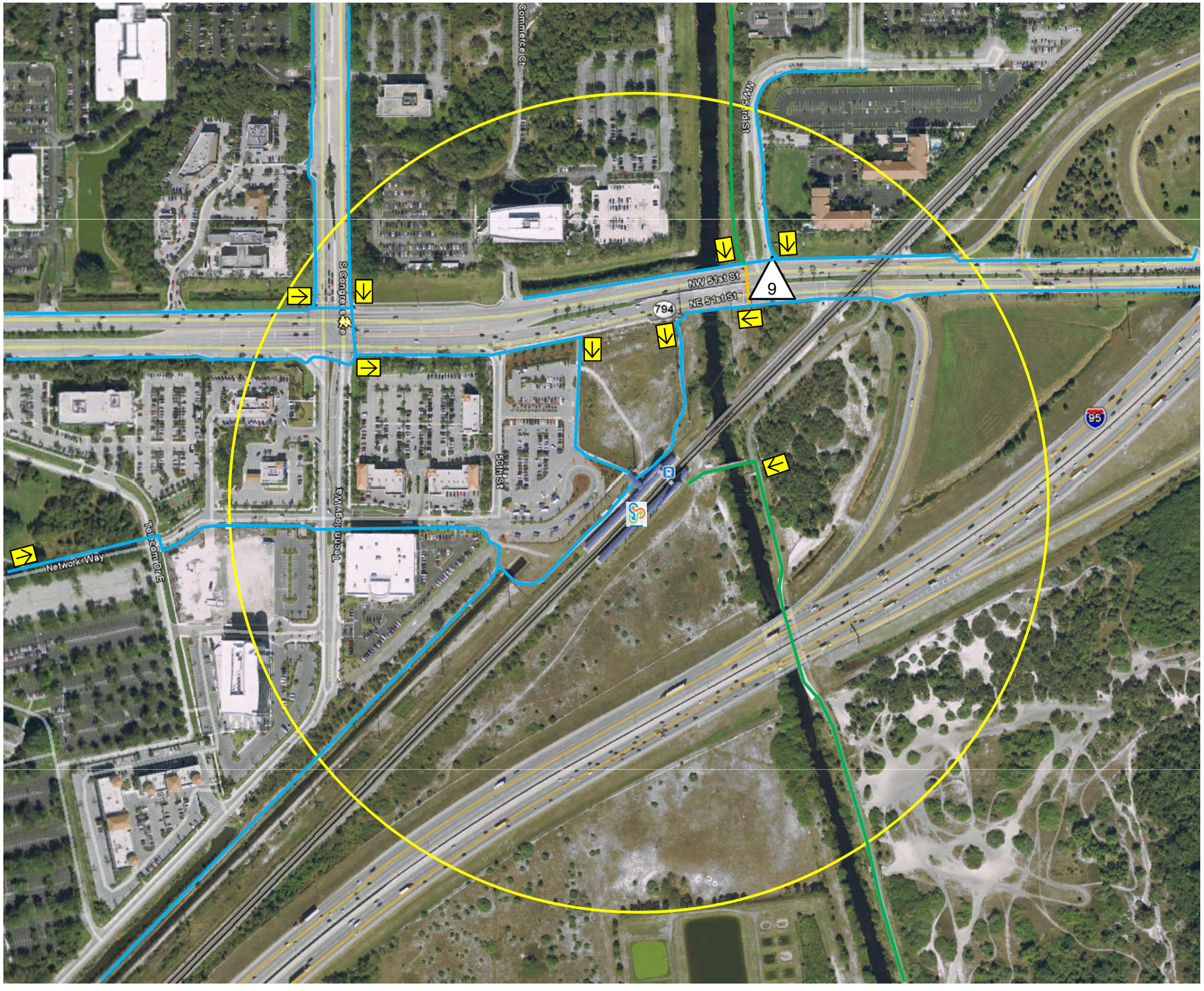

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EXHIBIT 10

Boca Raton
Pedestrian Routing Map

Boca Raton Tri-Rail
Station

- ¼ Mile Radius
- Proposed Pedestrian Route (Sidewalk)
- Future Pedestrian Route (Proposed Sidewalk Improvements)
- Proposed Crosswalk
- Proposed Pedestrian Route (Multi-Use Path)
- Future Pedestrian Route (Multi-Use Path)

XX — Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie
Engineering & Planning, Inc.

Exhibit 11. Boca Raton Bicycle Routing Map

Delray Beach Routing and Projects

The site is at a mid-block location adjacent to Congress Avenue about 1/2 mile south of Atlantic Avenue and ½ mile north of SW 10th Street. Direct east-west travel from the site is not feasible because of a canal and lack of infrastructure to the west and I-95 to the east. Atlantic Avenue or SW 10th Street are the first opportunities to travel east-west from the station. Between SW 10th Street and Atlantic Avenue, Congress Avenue has sidewalks on both sides of the road, including a 7-8 foot sidewalk on the east side of Congress Avenue. No bicycle facilities exist on Congress Avenue.

The City's *Proposed and Existing Bicycle Routes (May, 2003)* is shown is Exhibit 12 and the City's *Recommended Pedestrian / Bicycle Route (May 2003)* is shown in Exhibit 13. The City's *Proposed Greenways, Proposed and Existing Bike Racks, Proposed and Existing Bike Racks (Transportation Concurrency Exception Area),* and *Existing Bicycle Facilities* are shown in Exhibits 14, 15, 16, and 17.

The primary pedestrian and bicycle generators proximate to the Station are as follows:

- Governmental Center – Employment and Visitor Generator – 0.1 miles west
- Downtown Delray Beach – Employment and Commercial Retail Generator - 1.8 miles northeast
- Bus stops – Transit Generators – 0 to 0.3 miles northwest

Additional employment and residential uses exist within the study area in all directions, but none are clear pedestrian and bicycle generators.

The Delray Beach Tri-Rail station is co-located with a Palm Beach County governmental center that includes offices of the Tax Collector, Property Appraiser, Sherriff's Office, Planning and Zoning, and Southeast County Delray Beach Public Health Unit. Downtown Delray Beach is northeast of the Station.

Exhibit 12. Delray Beach Proposed and Existing Bicycle Routes (May, 2003)

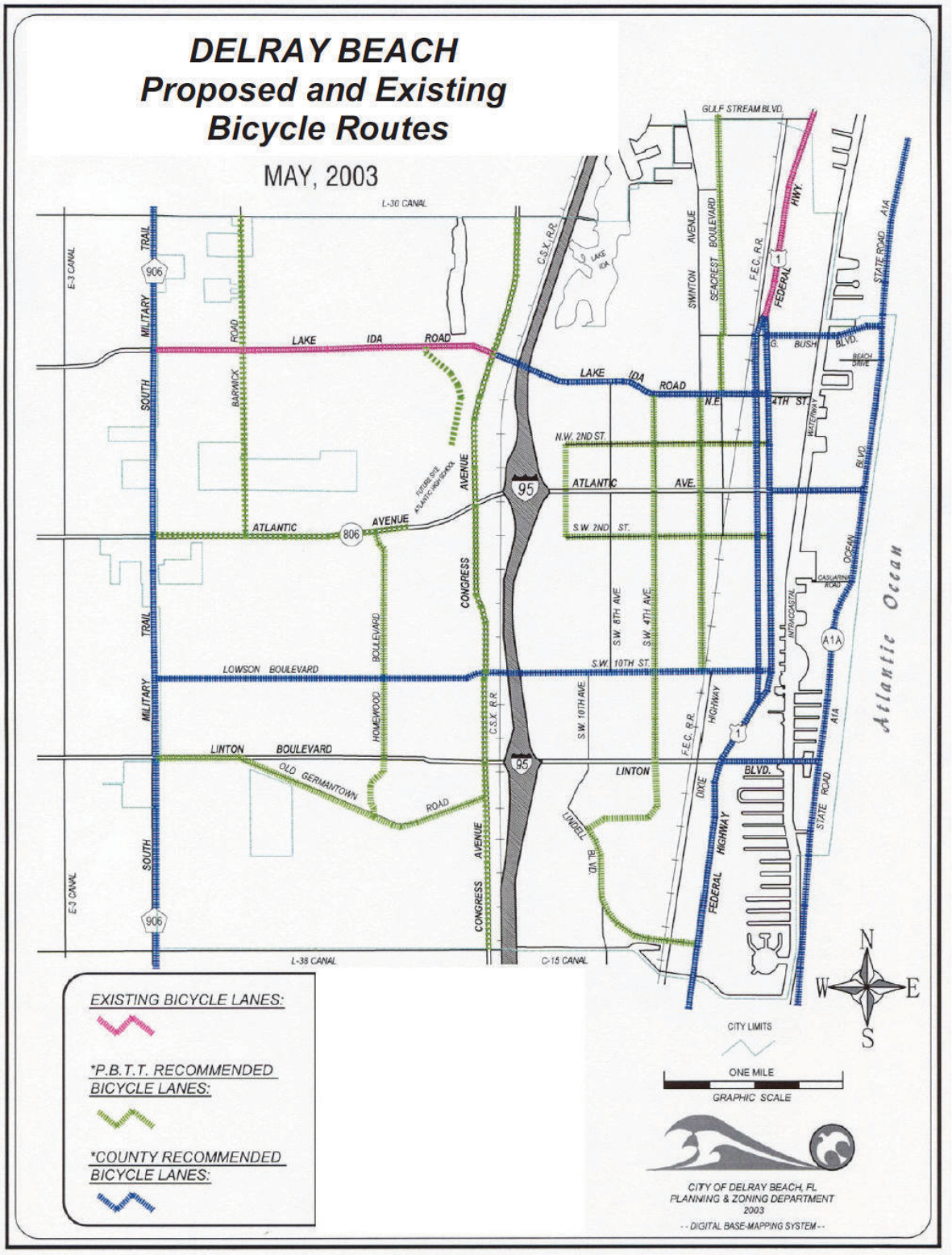


Exhibit 13. Delray Beach Recommended Pedestrian / Bicycle Route (May 2003)

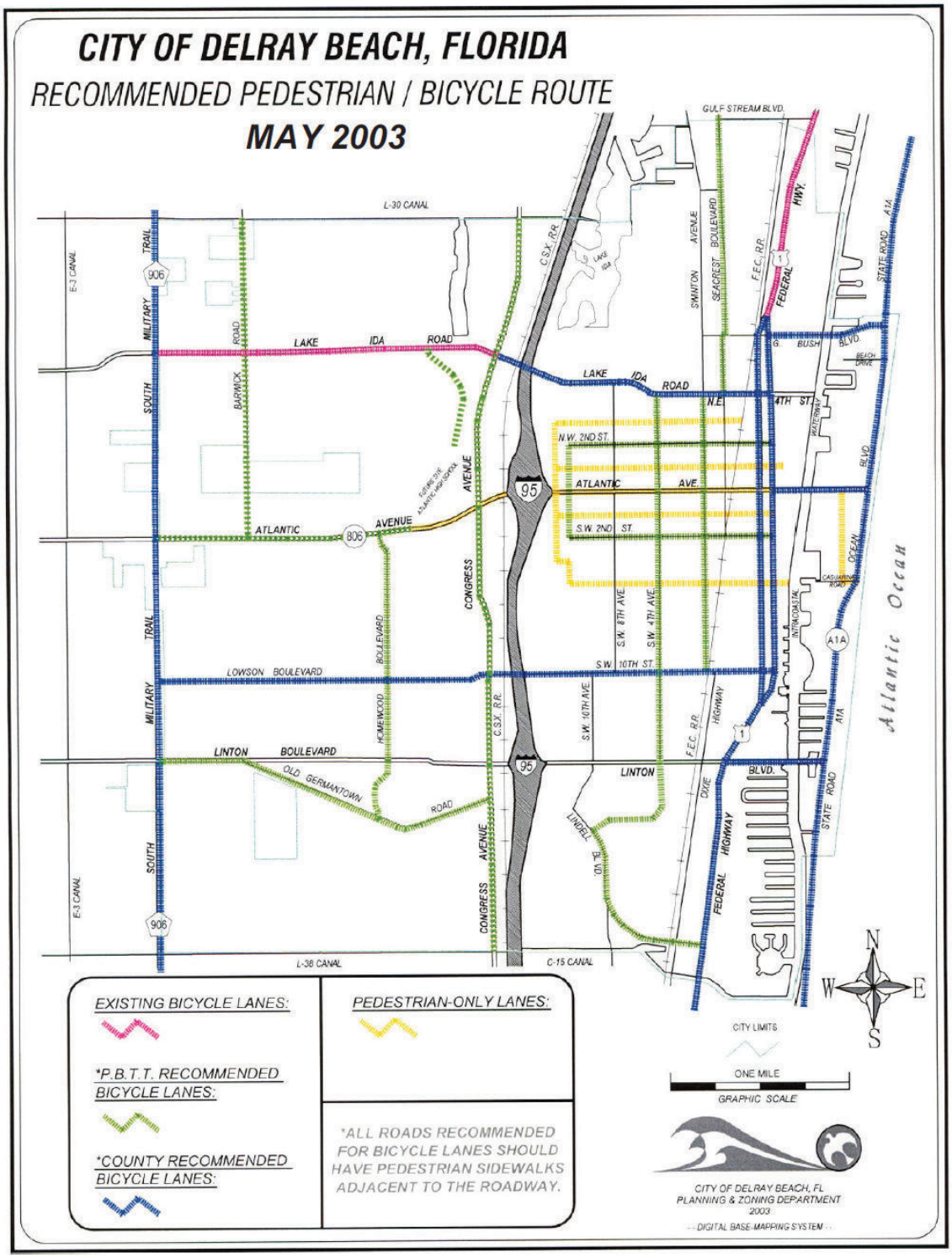


Exhibit 14. Delray Beach Proposed Greenways

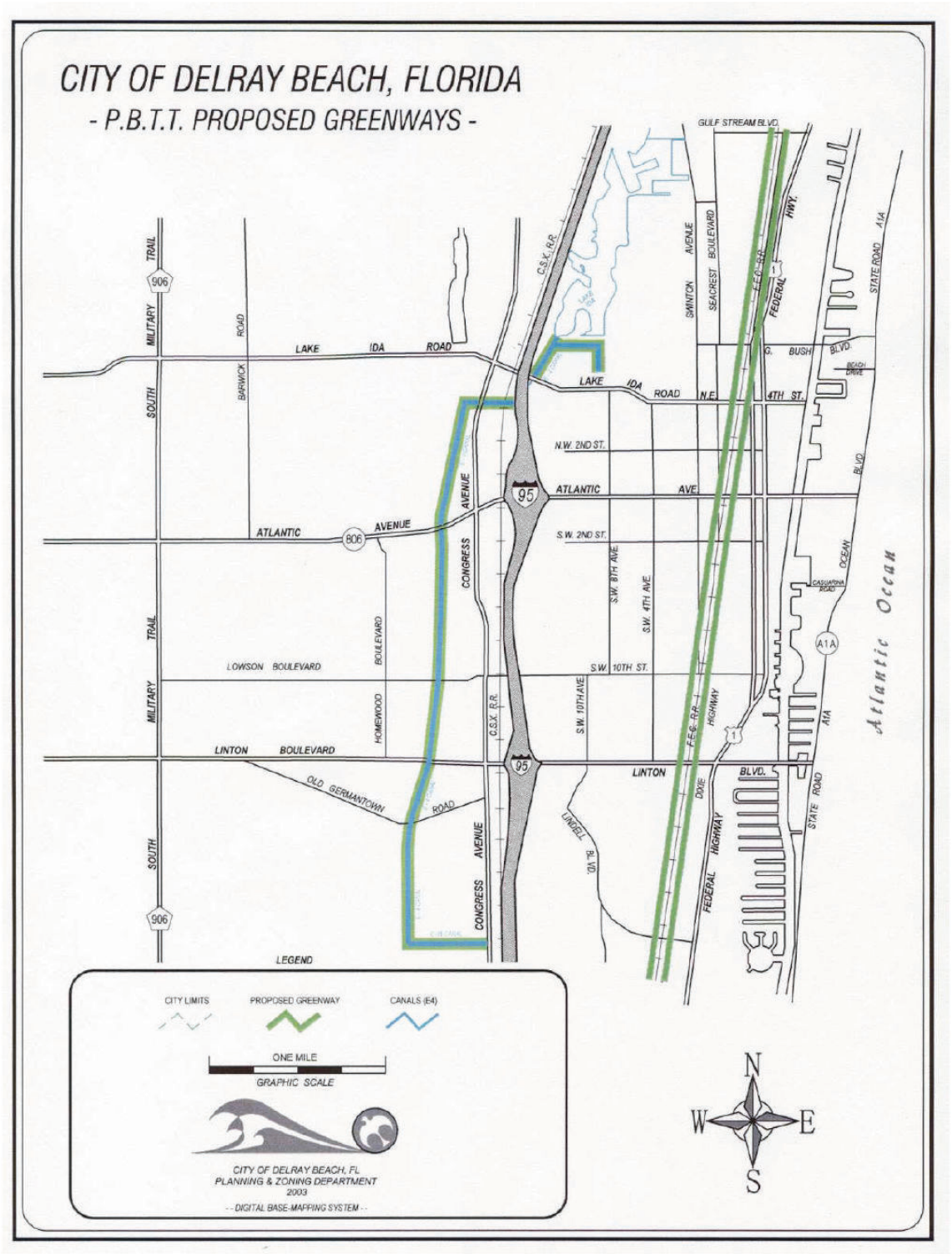
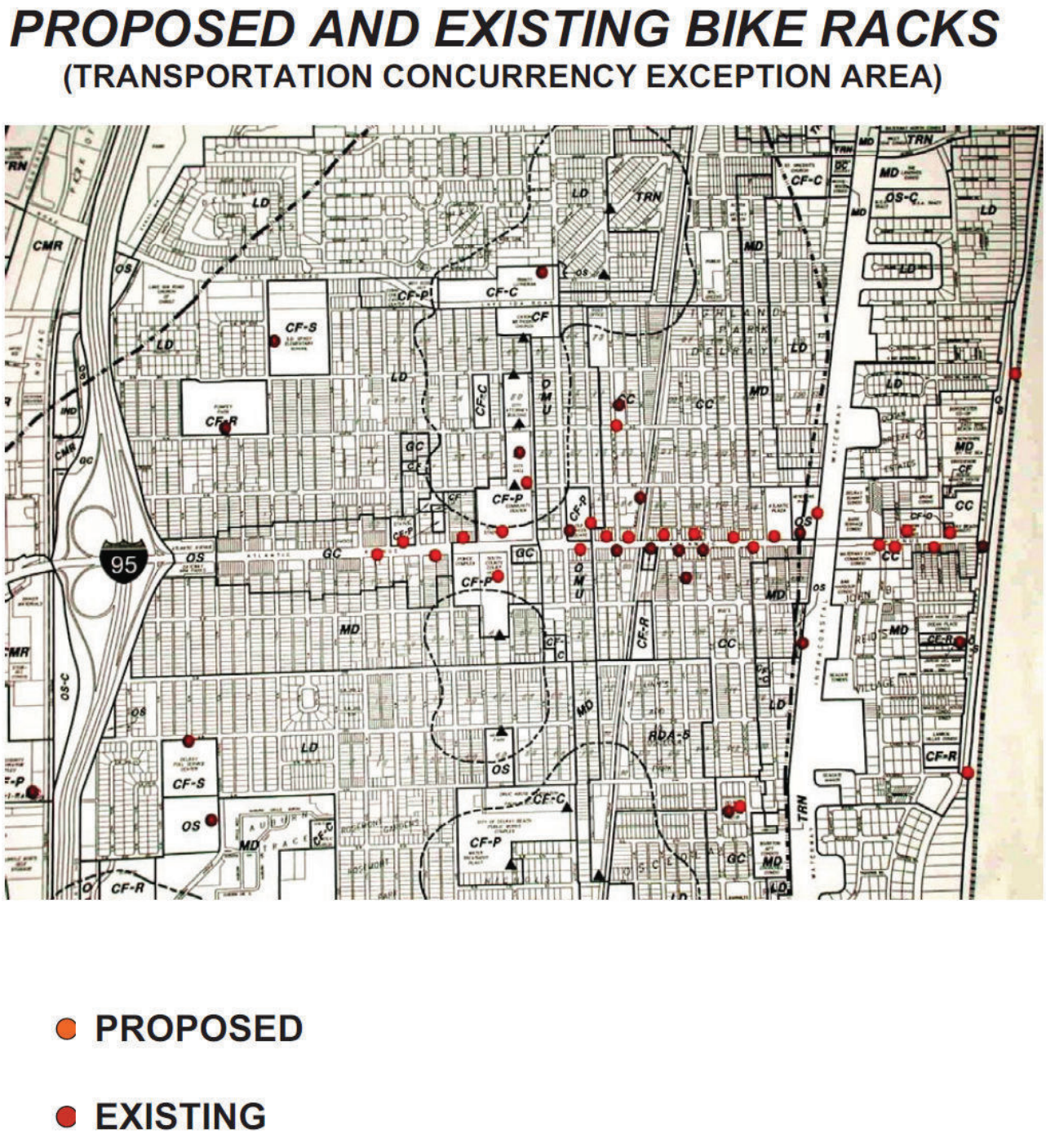


Exhibit 15. Delray Beach Proposed and Existing Bike Racks

Exhibit 16. Delray Beach Proposed and Existing Bike Racks

(Transportation Concurrency Exception Area)



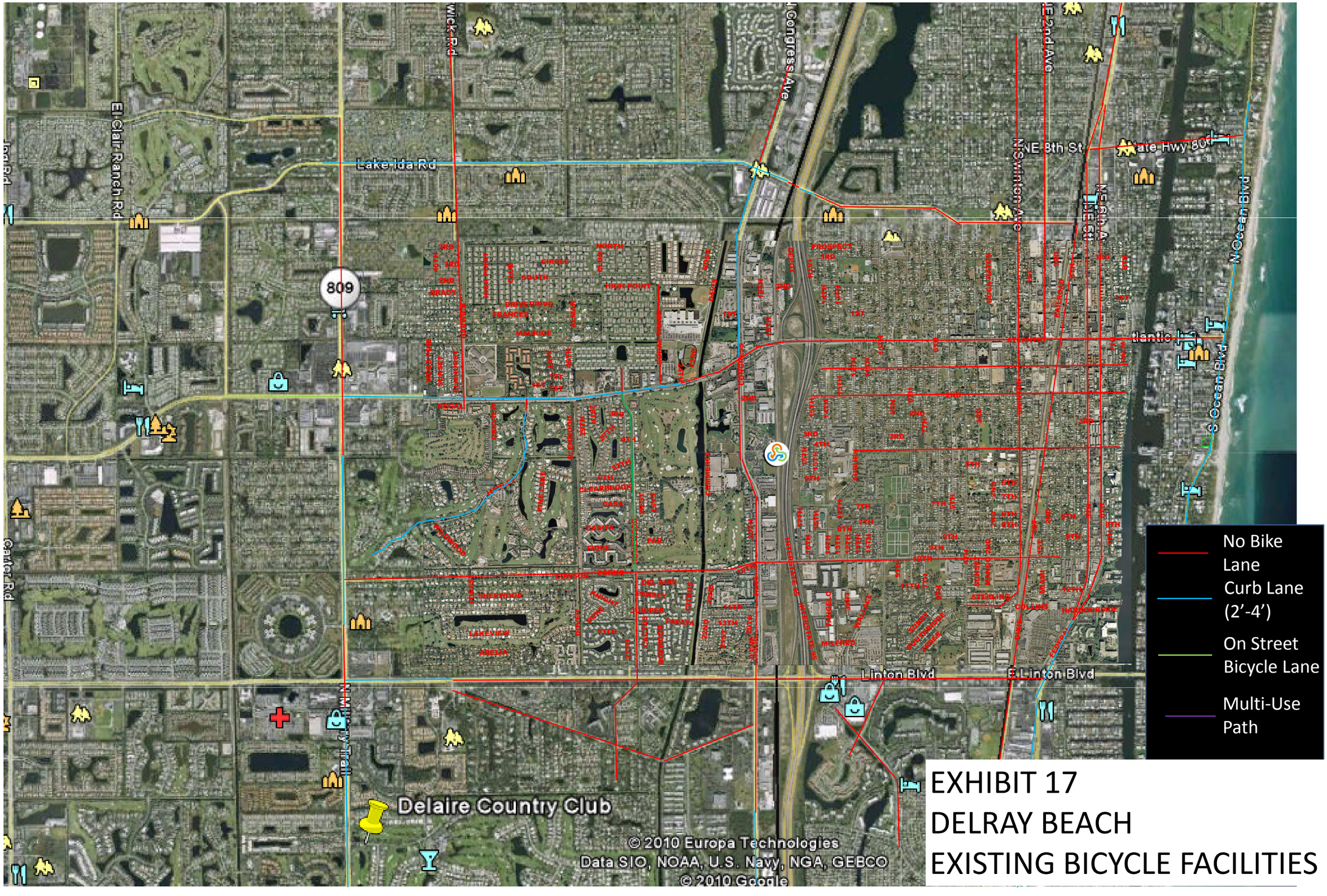


EXHIBIT 17
DELRAY BEACH
EXISTING BICYCLE FACILITIES

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A total of four pedestrian related projects and 16 bicycle improvement projects were identified. The most immediate need for improvements is at the Station site itself. The site does not contain pedestrian or bicycle facilities from the station to Congress Avenue or most of the governmental complex. The needed improvements include sidewalks to the northwest, west, and southwest to access the governmental buildings and Congress Avenue. Several bus stops are located adjacent to the Station, which need connectivity to the Station. A graphic showing the needed facilities is shown in Appendix C.

The greatest bicycle need is access to the station. Congress Avenue does appear to have right-of-way on the west side of the road, which could be used for a bicycle lane. However, this would require significant improvements to Congress Avenue, including reconstruction of the Congress Avenue median and widening and reconstructing the west side of the road for the entire length of the facility. An alternative to reconstruction of Congress Avenue is a multi-use trail adjacent to the railroad tracks (rail-with-trail) from Atlantic Avenue to SW 10th Street. Another alternative for north-south travel is construction of a multi-use trail adjacent to the canal west of Congress Avenue. The canal trail is consistent with Delray Beach's facilities plan. The projects identified build upon each other to improve access to the station in all directions.

A listing of the improvement projects is shown in Exhibit 18, the pedestrian routing is shown in Exhibit 19 and the bicycle routing plan is shown in Exhibit 20.

Exhibit 18. Delray Beach Facility Improvement Needs

Delray Beach Bicycle Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	**Cost Opinion ($)**
SHORT TERM						
12	Signage Improvements	Delray Beach Routing		2	Bicycle routing	$ 520
13	Station Improvements	Congress	Station	0.1	Bicycle Striping	$ 1,300
MEDIUM TERM						
LONG TERM						
14	Multi-Use Path	SW 10th Street	Atlantic Ave	1	Construct Multi-Use Path	$ 228,800
15	Atlantic Ave	SFCR Tracks	12th Ave	0.4	widen road to add bike lanes	$ 91,520
16	12th Ave	NW 2nd St	SW 2nd St	0.5	widen road to add bike lanes	$ 114,400
17	SW 2nd Street	SW 12th Ave	Federal Hwy	1.1	widen road to add bike lanes	$ 251,680
18	Lowson Rd / SW 10th Street	Congress	SE 5th Ave	1.5	widen road to add bike lanes and / or reconfigure available pavements	$ 343,200
19	Lowson Rd	Military	Congress	1.9	widen road to add bike lanes	$ 434,720
20	Lowson Rd	Military	Congress	650	Bridge widening	$ 84,500
21	NW 2nd Street	NW 12th Ave	Federal Hwy	1.1	widen road to add bike lanes	$ 251,680
22	Homewood Blvd	Linton	Lowson	0.4	reconfigure roadway and restripe to add bike lanes	$ 10,400
23	Homewood Blvd	Germantown	Linton	0.3	widen road to add bike lanes	$ 68,640
24	Germantown	Linton	Homewood	0.8	widen road to add bike lanes	$ 183,040
25	NW 4th Ave	Linton	Lake Ida	2.3	widen road to add bike lanes	$ 526,240
26	SW 10th Ave	SW 10th St	Lindell	0.8	widen road to add bike lanes and / or reconfigure available pavement	$ 183,040
27	Lindell Blvd	SW 10th Ave	Dixie Hwy	1	widen road to add bike lanes	$ 228,800
28	Carl Bolter Dr	Lindell Blvd	County Club Dr	0.4	widen road to add bike lanes	$ 91,520
						$ 3,094,000

Delray Beach Pedestrian Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	Cost Opinion ($)
SHORT TERM						
29	Station Improvements	Delray Beach Station		0.4	Sidewalks	$ 62,400
30	Signage Improvements	Delray Beach Routing		2	Pedestrian Routing signage	$ 520
LONG TERM						
31	SW 10 Street	FEC Rail Crossing		1	Install sidewalk and rail crossing on north side of road	$ 130,000
32A	SW 10 Street / Lowson Blvd	Canal	Dover Road	0.6	Install sidewalk on north side of road	$ 93,600
32B	SW 10 Street / Lowson Blvd	Canal	Dover Road	325	Bridge widening	$ 42,250
						$ 286,520

1. Southeast County Public Health Unit
2. Planning and Zoning, Supervisor of Elections, Sherriff's Offices
3. Tax Collector, Motor Vehicle, Property Appraiser Offices

N

EXHIBIT 19

Delray Beach Pedestrian Routing Map

Delray Beach Tri-Rail Station

- ¼ Mile Radius
- Proposed Pedestrian Route (Sidewalk)
- Future Pedestrian Route (Proposed Sidewalk Improvements)
- Proposed Crosswalk
- Future Pedestrian Route (Recommended Multi-Use Path)

XX — Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie Engineering & Planning, Inc.

Exhibit 20. Delray Beach Bicycle Routing Map

Boynton Beach Routing and Projects

The site is located within the northwest quadrant of I-95 and Gateway Boulevard. Access to the site is provided via High Ridge Road. High Ridge Road provides direct access to the north, but dead ends at Boynton Beach High School south of Gateway Boulevard. High Ridge Road has pedestrian facilities, but no bicycle facilities. Gateway Boulevard (also known as 22nd Avenue) provides east-west access to the site. Gateway Boulevard has sidewalk facilities. A narrow curb lane (about 2 feet wide) exists on Gateway Boulevard west of I-95 and just east of I-95 a bicycle lane exists from NE 1st Lane to US 1. The City's *Conceptual Parks and Recreation System Map* and existing bicycle facilities are shown in Exhibits 21 and 22, respectively.

The primary pedestrian and bicycle generators proximate to the Station are as follows:

- Residential areas northeast and southeast of the station – Residential Generator – 0.4 to 2.0 miles east
- Children's Services Council of Palm Beach County – Employment and Visitor Generator - 0.1 miles south

Additional employment and residential uses exist within the study area in all directions, but none are clear pedestrian and bicycle generators.

A total of four pedestrian and eight bicycle improvement projects were identified. Sidewalk is needed to route individuals to the Children's Services building and to High Ridge Road. A picture of the missing sidewalk is shown in Exhibit 23. Exhibit 24 shows a need for a sidewalk to the properties north of the Station based on existing ground path. The sidewalks on Gateway Boulevard over the I-95 interchange are in need of improvement as well. The sidewalk needs wider ramps and ADA improvements (markings on the ramps). The current ramps are shown in Exhibit 25.

Exhibit 21. Boynton Beach Conceptual Parks and Recreation System Map

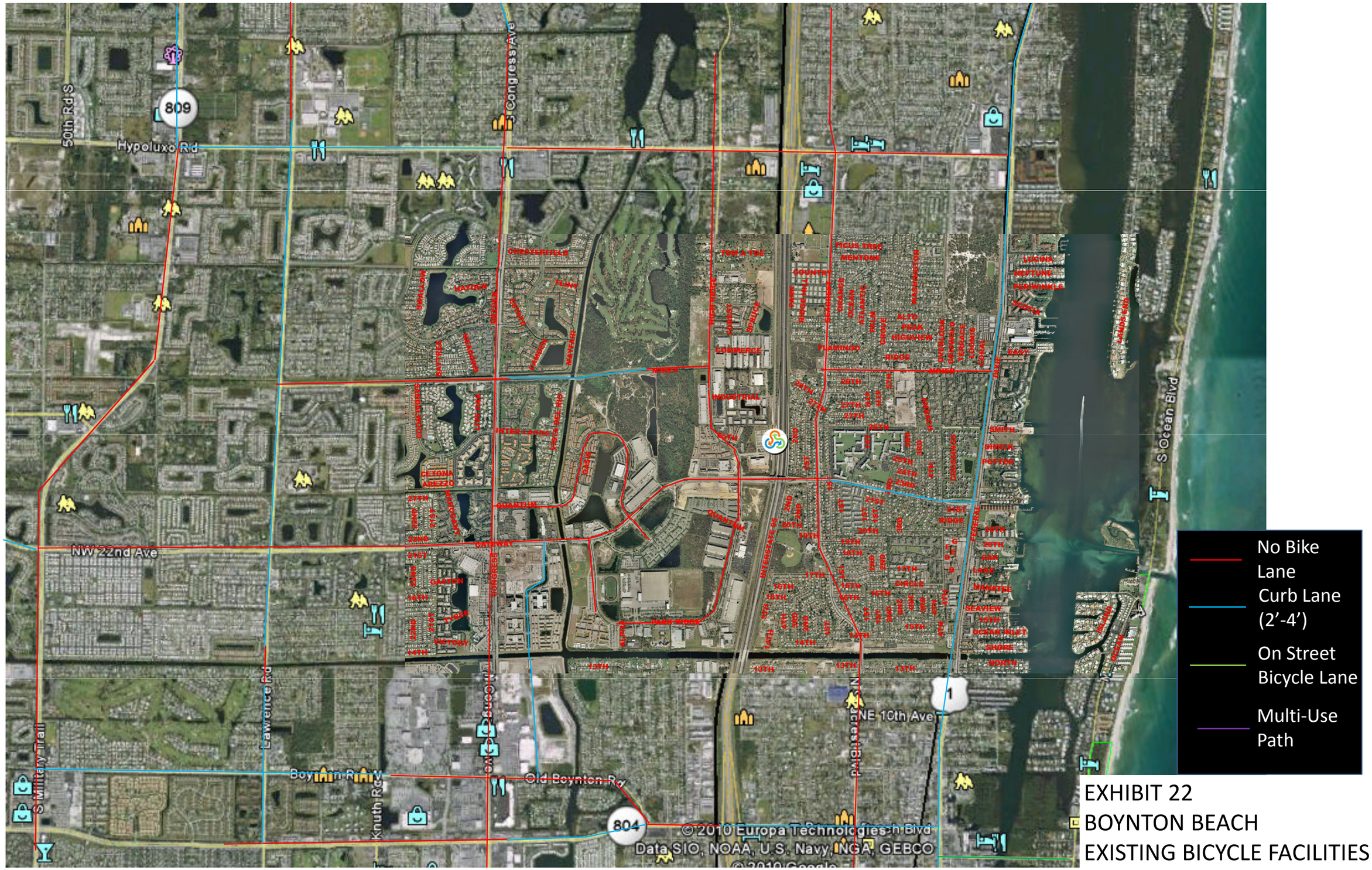

EXHIBIT 22
BOYNTON BEACH
EXISTING BICYCLE FACILITIES

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Exhibit 23. Missing Sidewalk and Ramps to Childrens' Services Council

Exhibit 24. Path to Industrial Offices North of the Station

Exhibit 25. Existing Gateway Boulevard Interchange Ramps

Because no dedicated bicycle facilities access the station, bicycle improvements are recommended for station access first. Bicycle access to the residential areas to the east is needed. One lower cost option examined is the reconstruction of the median within the Gateway Boulevard interchange and elimination of one westbound left-turn lane at the Gateway Boulevard southbound ramps and one westbound through lane at the northbound ramps. Using the available width, bicycle lanes could be constructed from High Ridge Road to Seacrest Boulevard. The proposed reconfiguration of Gateway Boulevard is shown in Exhibit 26. The interchange is projected to operate acceptably after the reconfiguration based on detailed intersection analyses as shown in Exhibit 27 and intersection analysis detail sheets are shown in Appendix D.

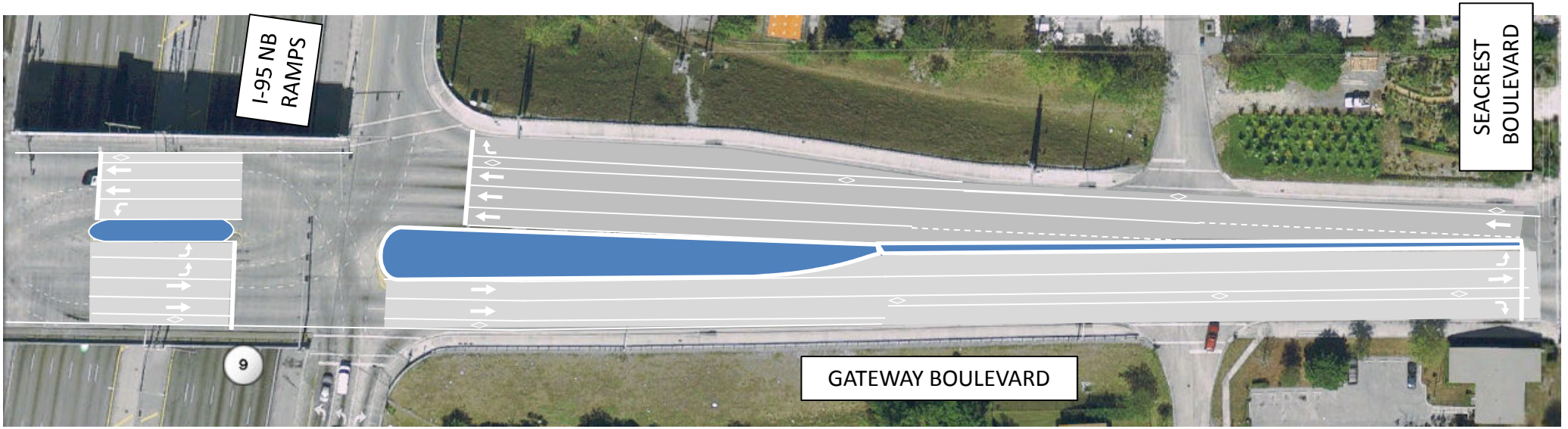

EXHIBIT 26 - PROPOSED GATEWAY BOULEVARD RECONFIGURATION

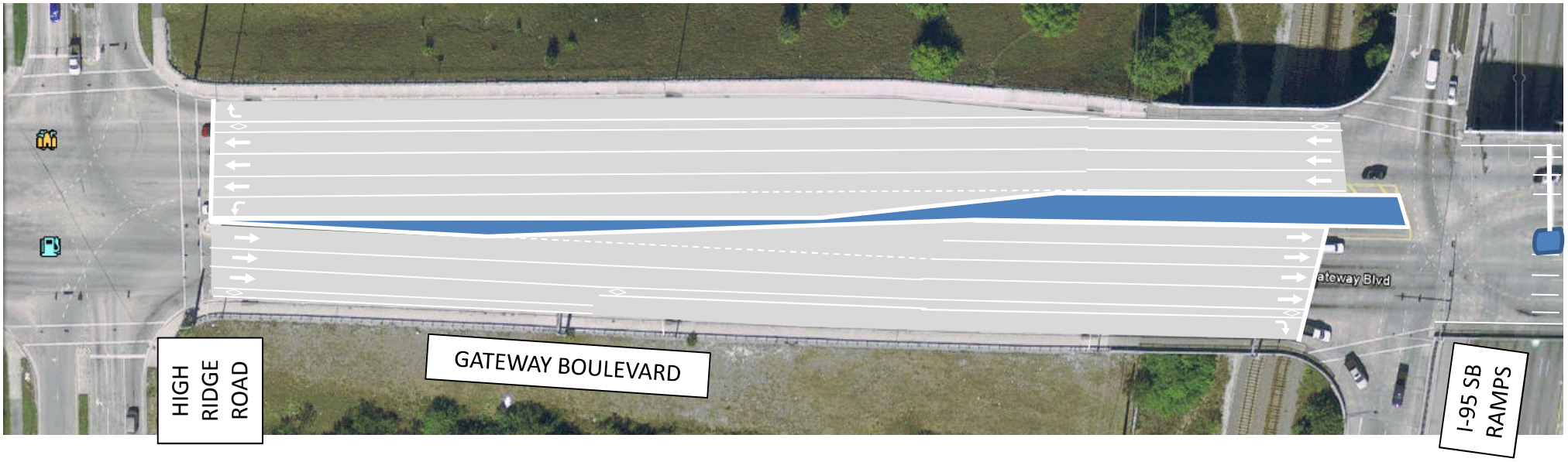

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Exhibit 27. Gateway Boulevard Interchange Level of Service

Time of Day	Interchange Ramp	Existing Configuration	Modified Configuration (1)
PM	West	B	C
	East	C	C
AM	West	C	A
	East	B	B

(1) Removal of one westbound left-turn lane at the southbound ramps and one westbound through lane at the northbound ramps.

Bicycle facilities on Gateway Boulevard west of High Ridge Road are needed as well. A portion of Gateway Blvd from Boulevard requires restriping to properly designate the bicycle lanes from High Ridge Road to about 0.2 miles west of High Ridge Road. Reduction of lane widths along the remaining portion of Gateway Boulevard is recommended in order to provide width for bicycle facilities on this segment. This would require the approval of the County Engineer. The County Engineer is evaluating these types of changes on a case-by-case basis. Right-of-way is available to widen Miner Road from High Ridge Road to Military Trail to provide bicycle facilities.

A listing of the improvement projects is shown in Exhibit 28, the pedestrian routing is shown in Exhibit 29 and the bicycle routing plan is shown in Exhibit 30.

Exhibit 28. Boynton Beach Facility Improvement Needs

Boynton Beach Bicycle Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	**Cost Opinion ($)**
SHORT TERM						
33	Station Entrance	High Ridge	Station	0.1	Remove turn lanes and add bike lanes	$ 2,600
MEDIUM TERM						
34	Gateway Blvd	High Ridge	Seacrest	0.35	reconstruct median, restripe laneage	$ 455,000
35	High Ridge Rd	Gateway Blvd	Miner	0.6	widen road to add bike lanes	$ 137,280
36	Gateway Blvd	Renaissance Commons Blvd	High Ridge	1	restriping and signage (1)	$ 78,000
37	Renaissance Commons Blvd	Old Boynton Rd	Gateway Blvd	1.1	restriping and signage	$ 14,300
LONG TERM						
38	Miner Rd	Congress	High Ridge	1	widen road to add bike lanes	$ 228,800
39	Miner Rd	Lawrence	Congress	1	widen, add striping, widen bridge	$ 228,800
40	Miner Rd	Military	Lawrence	0.6	widen, add striping	$ 137,280
						$ 687,180

Boynton Beach Pedestrian Projects						
Proj. No.	**Facility**	**From**	**To**	**Distance/ Quantity**	**Project**	**Cost Opinion ($)**
SHORT TERM						
41	Overall routing	Boynton Beach Area		12	Pedestrian Signage	$ 3,120
42	South Side of Site	On Tri-rail station		0.01	Sidewalk and ADA Ramps	$ 1,560
MEDIUM TERM						
43	Gateway Blvd	W. of I-95	E. of I-95	0.1	Improve sidewalk and provide ADA Ramps	$ 15,600
44	Miner Road	West of High Ridge	High Ridge	0.3	Sidewalk on south side of road	$ 46,800
						$ 67,080

(1) will require special permission to reduce vehicles travel lane widths to accommodate full width bike

1 Children's Services Council of Palm Beach County

N

EXHIBIT 29

Boynton Beach Pedestrian Routing Map

Boynton Beach Tri-Rail Station

¼ Mile Radius

Proposed Pedestrian Route (Sidewalk)

Future Pedestrian Route (Proposed Sidewalk Improvements)

Proposed Crosswalk

Future Pedestrian Route (Recommended Multi-Use Path)

XX Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie Engineering & Planning, Inc.

Exhibit 30. Boynton Beach Bicycle Routing Map

Lake Worth Routing and Projects

The Station is located within the southwest quadrant of I-95 and Lake Worth Road. Access to the Station is provided via Lake Worth Road. Lake Worth Road provides direct pedestrian and bicycle access to the east and west. There are no facilities that offer direct access to the north or south from the Station.

The primary pedestrian and bicycle generators proximate to the Station are as follows:

- Palm Beach Community College – Student Generator – 1.1 miles west
- Downtown Lake Worth – Employment and Commercial Retail Generator – 0.9 mile east
- John Prince Park – Social/Recreational Generator – 0.4 mile west
- Residential East of I-95 – Residential Generator – 0.3 to 2.0 miles northeast and southeast

Additional employment and residential uses exist within the study area in all directions, but none are clear pedestrian and bicycle generators.

The following resources were also used as guidance in the route development process:

- Exhibit 31 – Lake Worth Existing Bicycle Facilities Map
- Exhibit 32 – Lake Worth Proposed Bicycle Map
- Exhibit 33 – Lake Worth Station Existing Bicycle Facilities

Exhibit 31. Lake Worth Existing Bicycle Facilities Map

Exhibit 32. Lake Worth Proposed Bicycle Network Map

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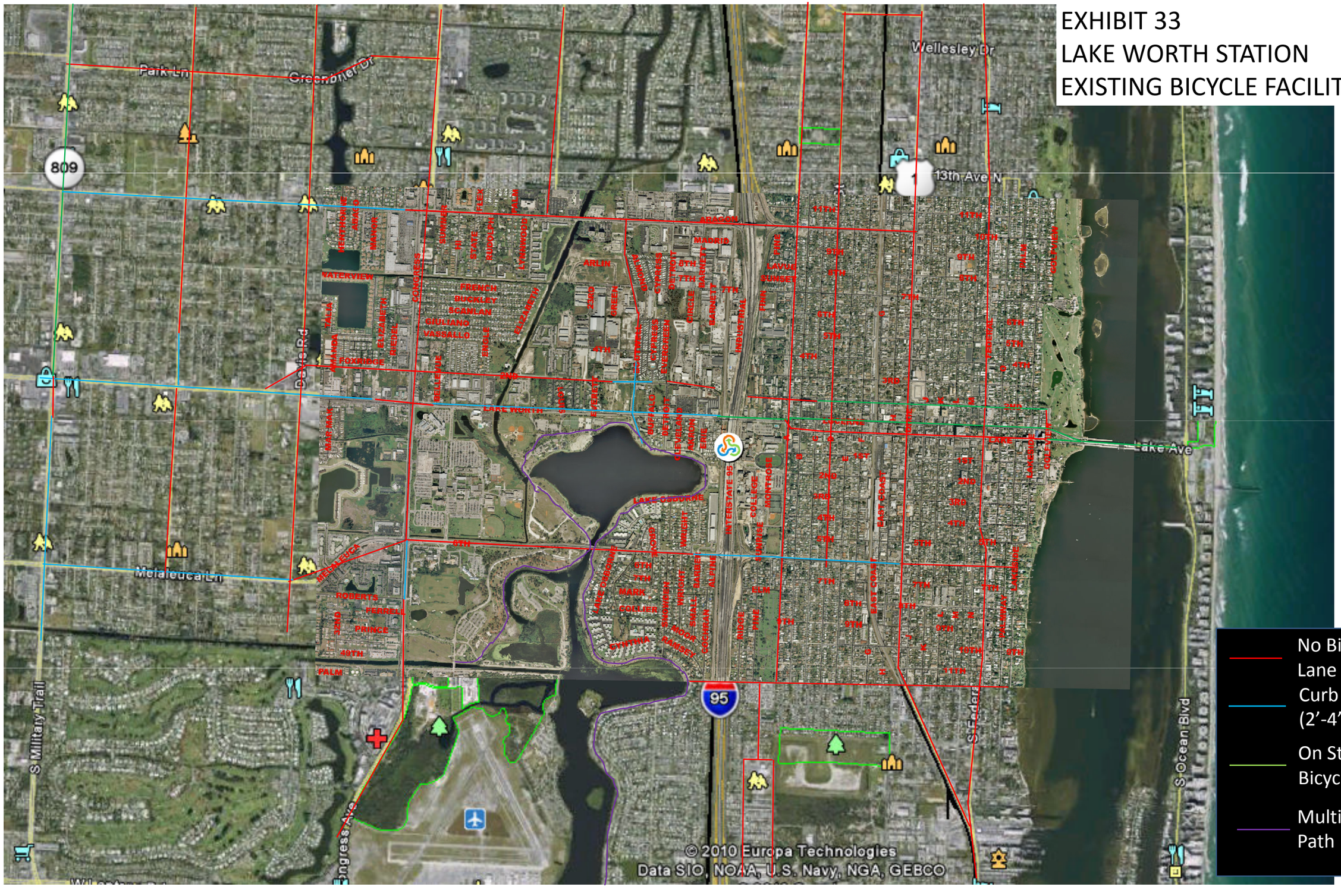
EXHIBIT 33
LAKE WORTH STATION
EXISTING BICYCLE FACILITIES



No Bike Lane
Curb Lane (2'-4')
On Street Bicycle Lane
Multi-Use Path

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A total of four pedestrian and 16 bicycle improvement projects were identified. Sidewalk improvements are recommended to gain access from the southeast and southwest. A route is needed to connect from the Station southward to 6th Avenue South. A route was recommended in the City's Transit Oriented Development Charrette through the City's utility plant areas. A route to the southwest is recommended southward from the station to a parcel of City land, where the path can turn west to intersect Lake Osbourne Drive.

Dedicated bicycle facilities exist on Lake Worth Road from the Station to South Ocean Boulevard in the east and Congress Avenue in the west. Lake Worth Road is proposed as the bicycle arterial to the station. The other recommended begin by connecting to Lake Worth Road and match the City's bicycle facilities plan. Because of the difficulty of directly accessing the station from the north or south, a rail-with-trail should be considered adjacent to the tracks from Lake Worth Road to 12th Avenue South. Right-of-Way does appear available for a rail-with-trail north of Lake Worth Road; the connection to the north is not as critical as the connection to the south.

One of the improvements identified is to modify the two bus pullouts that eliminate a segment of the bicycle lanes just west of the station on Lake Worth Road. A picture of the issue is shown in Exhibit 34.

Exhibit 34. Bus Bay Blocking the Eastbound Lake Worth Road Bicycle Lane

A listing of the improvement projects is shown in Exhibit 35, the pedestrian routing is shown in Exhibit 36 and the bicycle routing plan is shown in Exhibit 37.

Exhibit 35. Lake Worth Improvement Project Needs

Lake Worth Bicycle Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
45	Routing Signage	Lake Worth Area		11	Bicycle Signage	$ 2,860
46	Lake Worth Road	West of station		2	Add bike lane through bus lane	$ 2,600
MEDIUM TERM						
47	B Street	12th Ave S	10th Ave N	1.8	Bicycle Striping	$ 23,400
48	C Street	12th Ave S	10th Ave N	1.8	Bicycle Striping	$ 23,400
49	SE Station Connector(1)	Station	6th Ave South	0.6	Add shared arrow marking	$ 7,020
50	Snowden Dr	Lake Osbourne Dr	6th Ave South	0.4	Add shared arrow marking	$ 5,200
51	Wright Drive	6th Ave South	Lake Osbourne Dr	0.2	Add shared arrow marking	$ 2,600
52	Akron Street	Lake Osbourne Dr	Lake Worth Road	0.1	Add shared arrow marking	$ 1,300
LONG TERM						
53	12th Ave South	Lake Osbourne Dr	S Federal Hwy	1.2	widen road to add bike lanes	$ 274,560
54	Boutwell Rd	2nd Ave North	10th Ave N	0.6	widen road to add bike lanes	$ 137,280
55	2nd Ave North	Davis	Boutwell	1.4	reconfigure roadway and restripe to add bike lanes	$ 320,320
56A	Davis	Lake Worth Rd	Alemeda Dr	1.7	widen road to add bike lanes	$ 388,960
56B	Davis	Lake Worth Rd	Alemeda Dr	3	Canal crossings	$ 21,840
57A	Kirk	Melaleuca	Park Ln	2	widen road to add bike lanes	$ 457,600
57B	Kirk	Melaleuca	Park Ln	3	Canal crossings	$ 21,840
58	Lakwood	Davis	Haverhill	1.5	widen road to add bike lanes	$ 343,200
59	High Ridge	Lake Osbourne Dr	Hypoluxo Rd	1.9	widen road to add bike lanes	$ 434,720
60	FEC Rails with Trails	All of Lake Worth		6	Add Multi-Use Path	$ 1,372,800
61	Barton/Andrew Redding Rd	12th Ave S	Lantana Rd	1.1	widen road to add bike lanes	$ 251,680
						$ 4,093,180

Lake Worth Pedestrian Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
62	Routing Signage	Lake Worth Area		9	Pedestrian Signage	$ 2,340
MEDIUM TERM						
63	SW Station Connector	Station	Lake Osbourne Dr	0.6	Add sidewalks and routing	$ 137,280
LONG TERM						
64	SE Station Connector(1)	Station	6th Ave South	0.4	Add sidewalks and routing	$ 62,400
65	Boutwell Rd	2nd Ave North	10th Ave North	0.6	Sidewalk	$ 93,600
						$ 293,280

(1) If right-of-way is available

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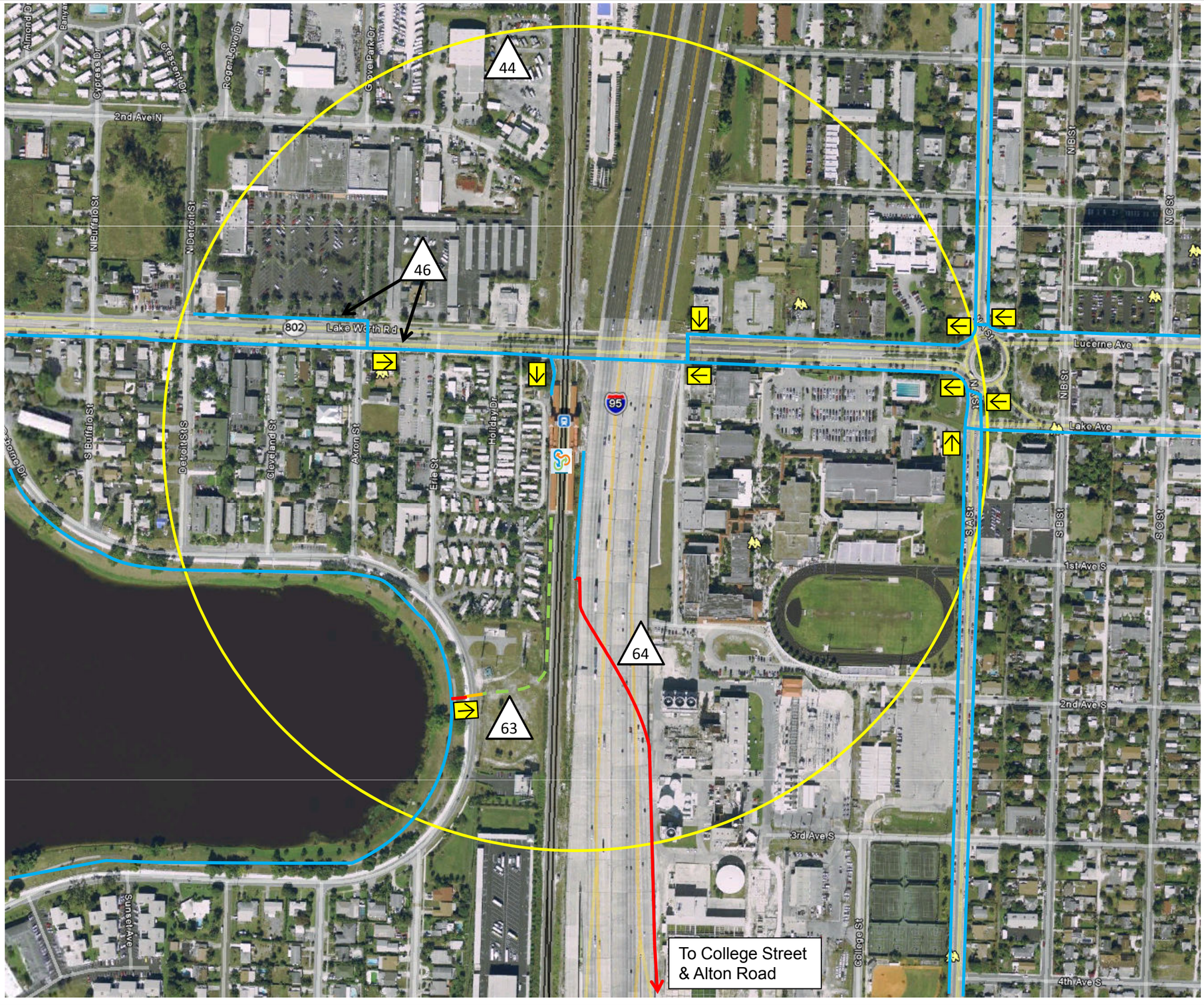

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EXHIBIT 36

Lake Worth Pedestrian Routing Map

Lake Worth Tri-Rail Station

¼ Mile Radius

Proposed Pedestrian Route (Sidewalk)

Future Pedestrian Route (Proposed Sidewalk Improvements)

Proposed Crosswalk

Future Pedestrian Route (Recommended Multi-Use Path)

XX — Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie Engineering & Planning, Inc.

Exhibit 37. Lake Worth Bicycle Routing Map

West Palm Beach Routing and Projects

The Station is located at the southwest corner of Tamarind Avenue and Banyan Boulevard. Primary access to the site is provided via Tamarind Avenue and Banyan Boulevard. Clearwater Drive provides secondary access to the Station and primary access for fixed route transit. Pedestrian facilities exist on the east side of Tamarind Avenue north and south of the station and on both sides of Banyan Boulevard. Bicycle facilities do not exist on any of the adjacent or accessing streets.

The primary pedestrian and bicycle generators proximate to the Station are as follows:

- Palm Beach County Courthouse – Employment and Visitor Generator – 0.5 miles northeast
- Alexander W Dreyfoos Junior School of the Arts – Student Generator – 0.2 miles south east
- Kravis Center for Performing Arts – Visitor Generator – 0.4 miles southeast
- Cityplace – Employment and Commercial Retail Generator – 0.5 miles southeast
- The waterfront area – Employment and Visitor Generator – 0.8 miles east
- City Hall – Employment and Visitor Generator – 0.4 miles east
- Palm Beach Convention Center –Visitor Generator – 0.6 miles southeast
- U.S. Government buildings – Employment Generator – 0.2 miles east
- Palm Beach Atlantic University – Student Generator – 1.5 miles southeast

Additionally, significant employment exists in the downtown area to the east, and significant population centers exist north and south of the Station.

Four programmed and one planned improvement affect the routing:

- Clematis Street from Tamarind Avenue to Sapodilla Avenue (programmed streetscape and sidewalk improvements)
- Quadrille Boulevard from Okeechobee Boulevard to Fern Street

(programmed streetscape and sidewalk improvements)

- Okeechobee Boulevard from Australian Avenue to Tamarind Avenue/Parker Avenue (programmed road widening and sidewalk improvements)
- Tamarind Avenue pedestrian crossing enhancements (programmed up to four additional pedestrian crossings on Tamarind Avenue adjacent to the Station)
- Parker Avenue south of Okeechobee Boulevard (planned three-laning with 3-foot to 3.5-foot wide curb lanes

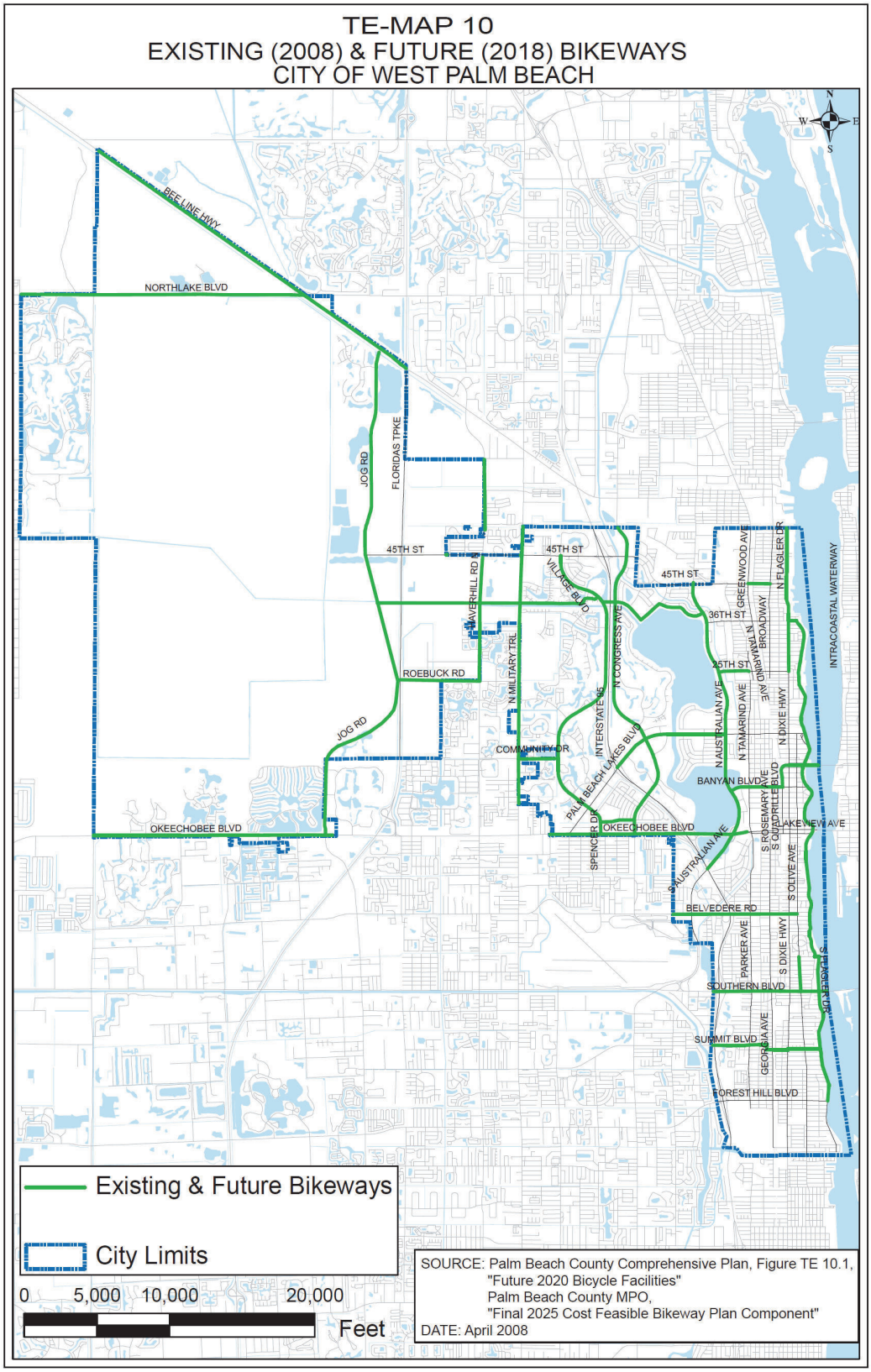
The following resources were also used as guidance in the route development process:

- Exhibit 38 – West Palm Beach Existing and Future Bikeways
- Exhibit 39 – West Palm Beach Existing Bicycle Facilities

A total of two pedestrian and seventeen bicycle improvement projects were identified. The City has a very good pedestrian network around the station. The only sidewalk improvement recommended is access to the large employment area off of Old Okeechobee Road, south of the Station. A route is needed to connect from the Station southward to Okeechobee Road on the west side of Tamarind Avenue, but right-of-way does appear to exist from the Station to Okeechobee Boulevard.

There are very few bicycle facilities within the City and most of the roads are right-of-way constrained. The most important facility for bicycle lanes is Tamarind Avenue/Parker Avenue. A review of historic traffic volumes show no discernable change in traffic volumes over the last decade. The corridor is generally built out. Therefore, traffic volumes are expected to remain constrain in the future even though individual development or redevelopment projects may occur in the future. Based on the existing traffic volumes, it is feasible to eliminate one southbound lane on portions of Tamarind Avenue/Parker Avenue. Proposed modifications to Tamarind Avenue/Parker Avenue are shown in Exhibit 40 and supporting analyses are shown in Appendix E.

Exhibit 38. West Palm Beach Existing and Future Bikeways



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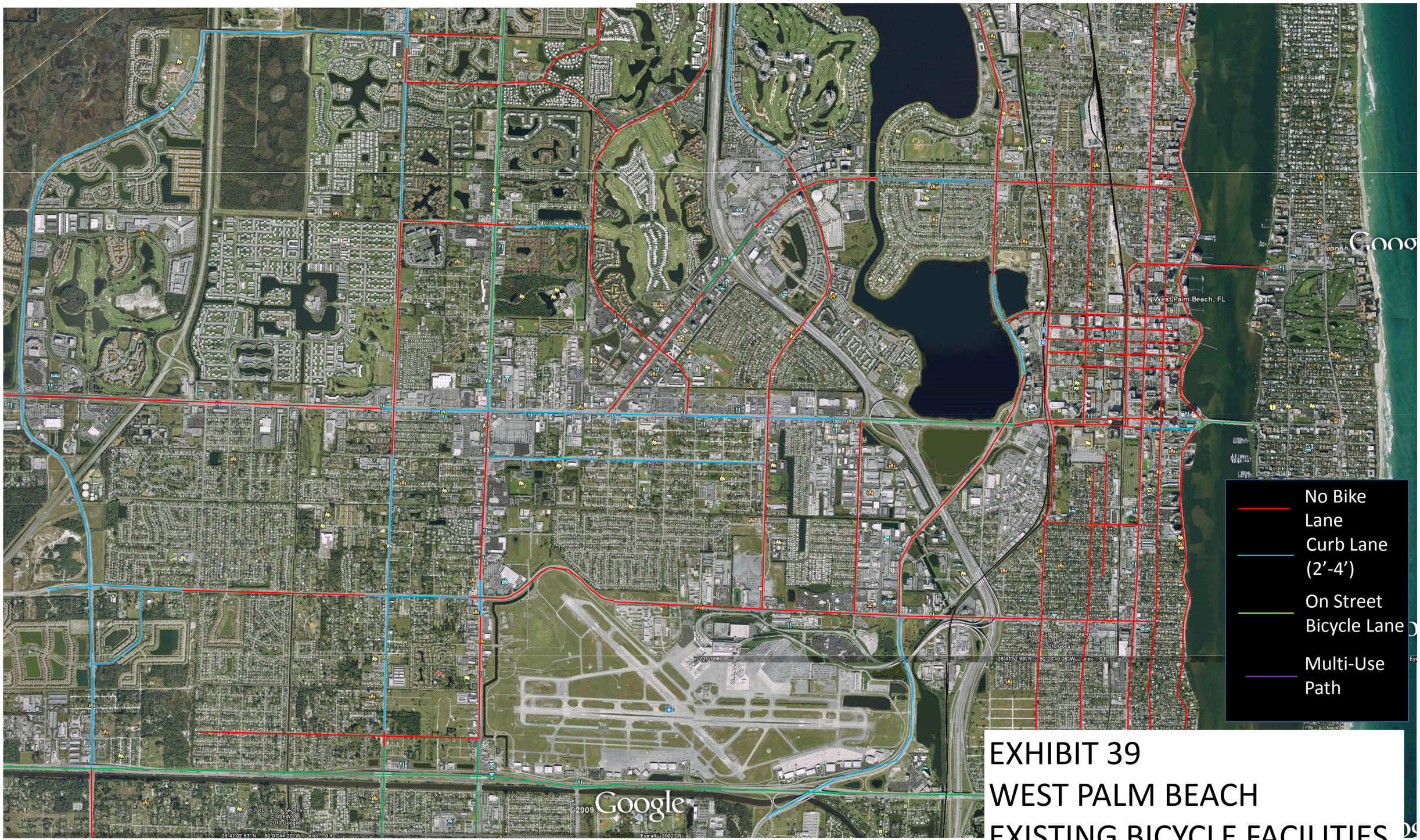


EXHIBIT 39
WEST PALM BEACH
EXISTING BICYCLE FACILITIES

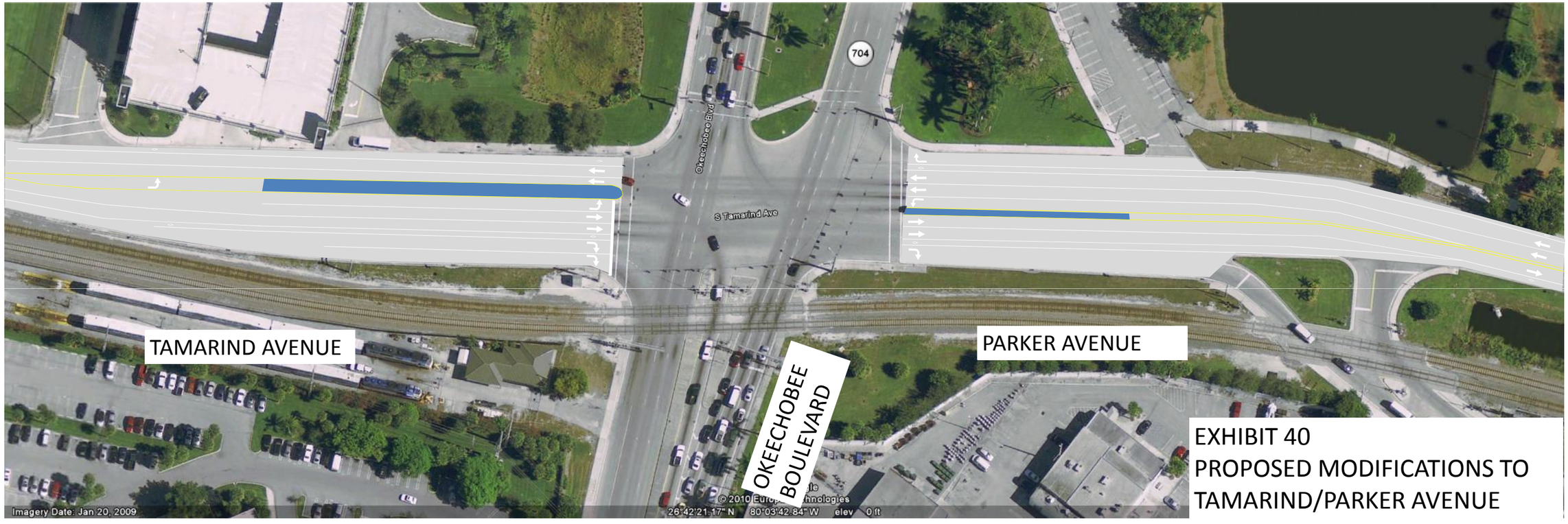


EXHIBIT 40
PROPOSED MODIFICATIONS TO
TAMARIND/PARKER AVENUE

The width necessary to install bicycle facilities could come from the following reconfiguration of laneage within the right-of-way:

- Eliminate the one southbound lane on Tamarind Avenue from 2nd Street to Fern Street; and
- Eliminate the median on Tamarind Avenue from Fern Street to Iris Street; and
- Eliminate one northbound lane from Old Okeechobee Road to Iris Street: and
- Eliminate one southbound lane from Old Okeechobee Road to Flamingo Drive

These dedicated bicycle facilities could then incorporate with the City's plans to change Parker Avenue to a three lane facility south of Okeechobee Boulevard. The recommended bike route turns east on Flamingo Drive and then south on Lake Drive. Tamarind Avenue north of 2nd Street is recommended for a sharrow and is the primary route to travel north of the station. The remaining facilities propose to connect to this north-south route.

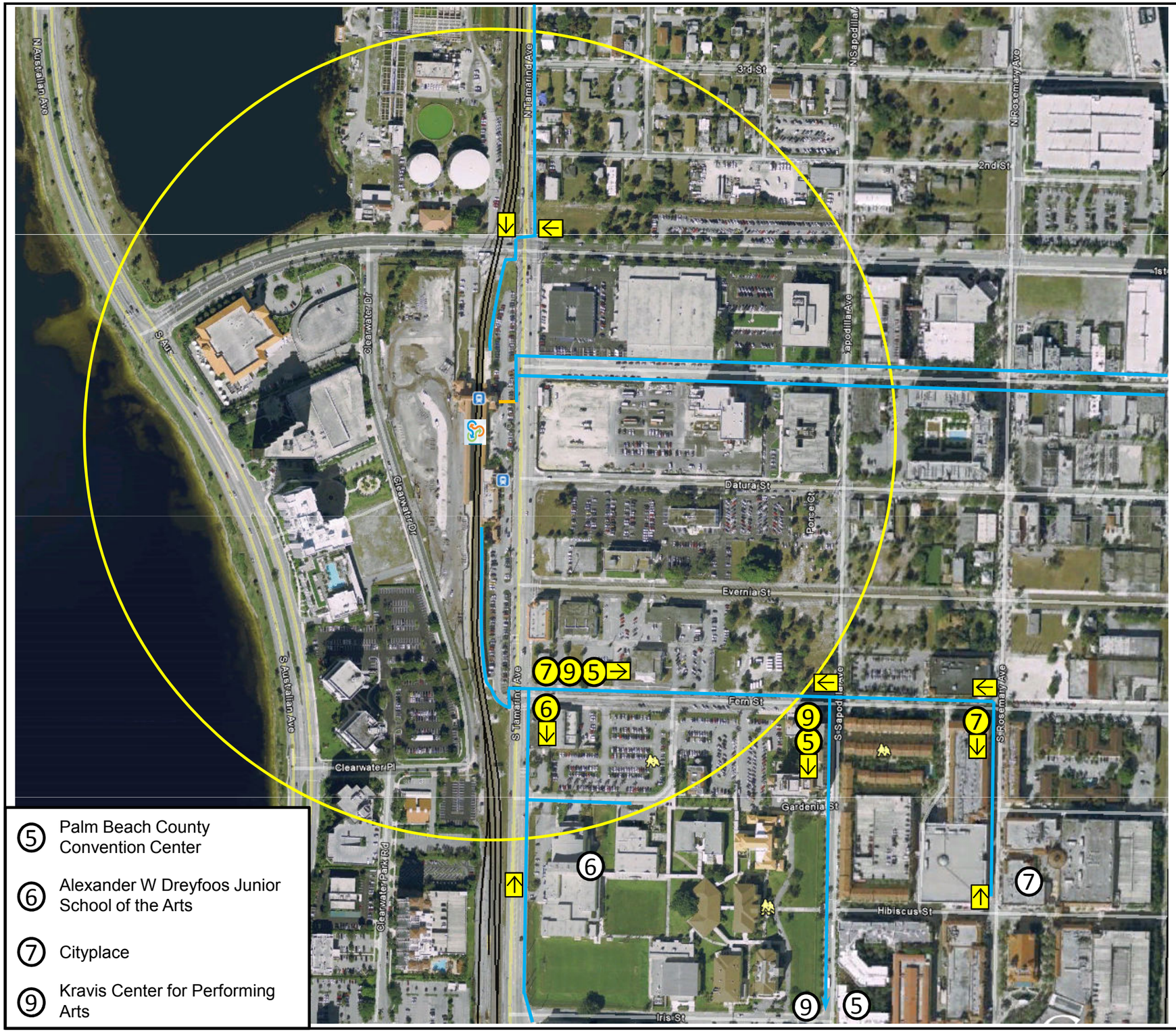
A listing of the improvement projects is shown in Exhibit 41, the pedestrian routing is shown in Exhibit 42 and the bicycle routing plan is shown in Exhibit 43.

Exhibit 41. West Palm Beach Improvement Project Needs

West Palm Beach Bicycle Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
MEDIUM TERM						
66	Tamarind Avenue	Banyan	25th St	1.7	shared lanes striping and signage	$ 22,100
67	Parker Avenue	Banyan	Flamingo	1.3	restriping and signage	$ 169,000
68	Flamingo Drive(1)	Parker	Lake	0.15	striping and signage	$ 1,950
69	Lake Avenue(1)	Flamingo	Summit	2.1	restriping and signage	$ 109,200
70	Evernia/Clematis (1)	Tamarind	Flagler	0.8	Restripe, remove parking, remove traffic calming	$ 83,200
71	S Rosmarey Ave	Evernia	Okeechobee	0.4	shared lanes striping and signage	$ 5,200
72	Olive Ave	Evernia	3rd St	0.3	shared lanes striping and signage	$ 3,900
73	3rd Street	N Olive	N Dixie	0.1	shared lanes striping and signage	$ 1,300
74	N. Dixie Hwy	3rd St	Evernia	0.3	shared lanes striping and signage	$ 3,900
75	25th, Tamarind, Service Rd	Tamarind	Windsor Ave	0.6	shared lanes striping and signage	$ 7,800
76	Windsor Ave	Service	45th St	0.9	striping and signage	$ 11,700
77	36th Street	Windsor	Pointsettia Ave	0.8	restriping and signage	$ 41,600
78	15th Street(1)	Tamarind	N Dixie	0.8	restriping and signage	$ 20,800
79	7th Street(1)	Autstralian	Rosemary	0.6	restriping and signage	$ 15,600
80	Flamingo Drive(1)	Lake	Dixie	0.4	restriping and signage	$ 10,400
81	Old Okeechobee	Mercer Ave	Parker	0.6	restriping and signage	$ 15,600
82	Hollywood Pl/Monroe Dr(1)	Parker	Dixie	0.5	restriping and signage	$ 13,000
LONG TERM						
83	Southern Blvd	Parker	Lake	0.15	widen road to add bike lanes	$ 100,425
						$ 636,675

West Palm Beach Pedestrian Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
84	Over all routing	West Palm Beach Area		10	Pedestrian Signage	$ 2,600
MEDIUM TERM						
85	Parker S/W gap	Okeechobee	Old Okeechobee	0.05	New sidewalk	$ 7,800
						$ 10,400

(1) Also requires approval of West Palm Beach Parking Division because of elimination of on-street parking



5 Palm Beach County Convention Center

6 Alexander W Dreyfoos Junior School of the Arts

7 Cityplace

9 Kravis Center for Performing Arts

N

EXHIBIT 42

West Palm Beach Pedestrian Routing Map

West Palm Beach Tri-Rail Station

¼ Mile Radius

Proposed Pedestrian Route (Sidewalk)

Future Pedestrian Route (Proposed Sidewalk Improvements)

Proposed Crosswalk

Future Pedestrian Route (Recommended Multi-Use Path)

XX Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie Engineering & Planning, Inc.

Exhibit 43. West Palm Beach Bicycle Routing Map

Mangonia Park Routing and Projects

The Station is located off of 45th Street about 0.6 miles east of Congress Avenue. The Station is co-located with the Mangonia Park Jai-Alai Fronton. Primary access to the site is provided via 45th Street. A fence opening provides access to 52nd Street on the north (back) side of the Station. Pedestrian facilities exist on both sides of 45th Street and on one side of the entrance road. Bicycle facilities do not exist on 45th Street.

Employment and residential uses exist within the study area in all directions, but none are clear pedestrian and bicycle generators.

The Town has two bicycle / pedestrian projects that are development driven. When the development / redevelopment occurs, the following projects will be constructed:

- Jai-Alai Redevelopment – Reconstruct Entrance road, improve sidewalk and bike lanes
- Residential neighborhood 0.4 miles northwest of the station – Construct a multi-use path from the neighborhood to the Tri-Rail Station adjacent to the railroad right-of-way.

Exhibit 44, a map of the existing bicycle facilities, was also used as guidance in the route development process

A total of six pedestrian and 10 bicycle improvement projects were identified. The major facilities around the station have sidewalks (e.g. 45th Street, Australian Avenue. However, most of the minor facilities, do not have sidewalks, have sidewalk in disrepair, or have incomplete sidewalks. The distance from the station is challenging for pedestrians because it is over 2000 feet from 45th Street to the Station. One of the effects of the long walk from 45th Street is the apparent use of the area next to the tracks as a path from the station to Australian Avenue and possibly 45th Street. It is less than 1,500 feet to the station from Australian Avenue along the railroad tracks and about 2,900 to 45th Street along the railroad tracks.

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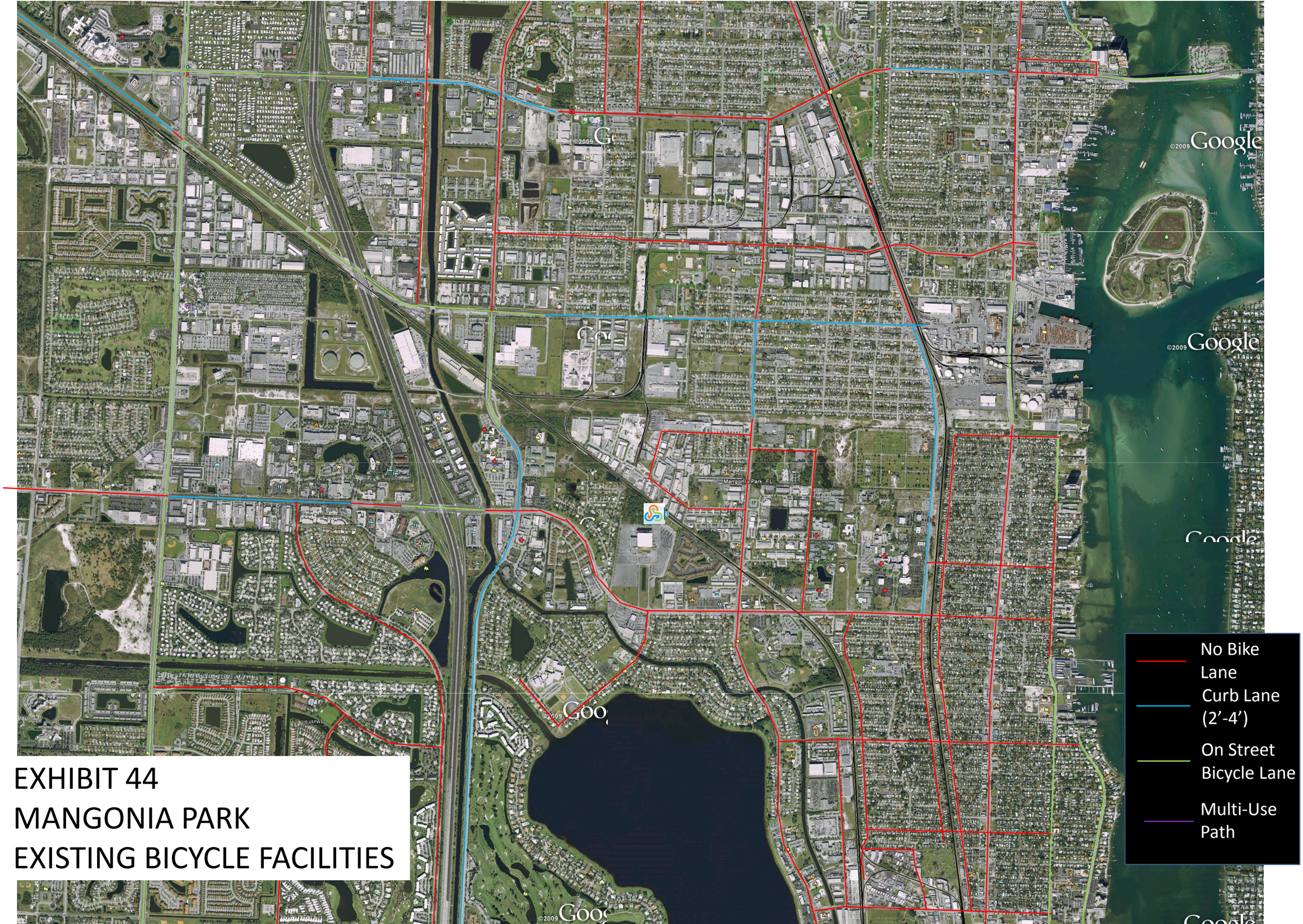

EXHIBIT 44
MANGONIA PARK
EXISTING BICYCLE FACILITIES

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Walking adjacent to the railroad tracks reduces the travel distance by about by about ½. Exhibit 45 is picture of the railroad tracks and apparent path adjacent to the tracks. Evidence of a path on both sides of the tracks to the southeast and on the south side of the tracks to the northwest exists. The feasibility of a rail-with-trails should be examined adjacent to this segment of tracks for as long as feasible to reduce the distance to access the station and significantly improve bicycle access to the station.

Exhibit 45. Evidence of an Unpaved Walking Path Adjacent to the Raiload Tracks (Looking Southeast)

Access to the north side (back) of the Station is provided by a narrow gate to 52nd Street as shown in Exhibit 46. For access to this side of the station the following are recommended:

- Construct ADA compliant access to 52nd Street; and
- Install bike racks on this side of the station; and

- Construct a sidewalk and lighting along Meander Drive from the Station to 53rd Street; and
- Install appropriate crosswalks on Meander Drive; and
- Reconfigure 53rd Street from Meander Drive to N. Australian Avenue
    - Remove the center left-turn lane
    - Install/improve/widen sidewalk on the north and/or south sides
    - Install bicycle facilities
    - Install lighting

Consideration should be given to extend the 53rd Street improvements east of N. Australian Avenue to 53rd Court. This would require removal of a median and monument sign within 53rd Street to prove for a sidewalk to 53rd Court.

Exhibit 46. Access to the Mangonia Park Station from the North

Feasibility of sidewalk improvements should be examined on North Shore Drive and N. Australian Avenue to widen the sidewalk and narrow the shoulder and/or vehicle travel lanes. The final pedestrian project proposes reconstruction of the sidewalk

curbs along N. Australian Avenue from 53rd Street to SR 710. Many of the existing curbs from the sidewalk to the street appear to be Type F curb and gutter, which is a vertical curb and does not contain any kind of ramp. A ramp at these locations will assist pedestrians and bicyclists using the sidewalk. Public sidewalk curbs and ramps are recommended for installation at all locations with the vertical curbing.

There are very few bicycle facilities within the Town and most of the major roads are right-of-way constrained. The lack of bicycle facilities is a particular concern along 45th Street. Bicycle facilities are proposed for the length of the entrance from 45th Street to the Station. The center left-turn lane at the Tri-Rail entrance can be removed without affecting the level of service of the intersection or the approach during the peak hours. If the intersection operates acceptably during the peak hours of the day, it will also operate acceptably during the off-peak hours as well.

Without the apparent ability to create bicycle facilities on Australian Avenue north of 45th Street or on 45th Street west of the CSX railroad tracks, a bicycle route to the station is very challenging. Construction of a rail-with-trail from the Station to 45th Street would provide a bicycle connection to 45th Street. East of the CSX railroad tracks, it appears that bicycle facilities could be added from the tracks to Flagler Drive within the right-of-way except for a small pinch point at the FEC railroad crossing. A rail-with-trail to the northwest to connect with Congress Avenue, which has bicycle facilities to SR 710, would provide a bicycle connection from the station to the northwest. This would be especially beneficial because SR 710 has bicycle lanes west of Congress Avenue and has curb lanes east of Congress Avenue and likely will have bicycle lanes when the facility is widened to four-lanes east of Congress Avenue.

The City of West Palm Beach identified an alternative east-west route in the Bikeways Map of their comprehensive Plan. The route begins at the intersection of N. Australian Avenue and 39th Street and extends westerly along 39th Street to the intersection with North Shore Drive. The route proceeds south on North Shore Drive and west on Lake Shore Drive to Congress Avenue. The proposed route then extends across I-95 to Village Boulevard. The route continues further west generally along

the canal located south of Echo Lake Drive and South Shaker Way to Jog Road west of the Turnpike.

This plan proposes to connect to the route at the intersection of Lake Shore Drive and 39th Street and connect it to the Tri-Rail Station. A route is also proposed to connect further to the east via N. Australian Avenue and 36th Street.

A listing of the improvement projects is shown in Exhibit 47, the pedestrian routing is shown in Exhibit 48 and the bicycle routing plan is shown in Exhibit 49.

Exhibit 47. Mangonia Park Improvemen Project Needs

Mangonia Park Bicycle Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
86	Over all routing	Mangonia Park Area		2	Bicycle Signage	$ 520
MEDIUM TERM						
87	Tri-Rail Entrance	45th St	Station	0.35	off-street bike lanes and/or restriping for bike lanes	$ 80,080
88	Meander Drive	Station	53rd Street	0.1	shared lanes striping and signage	$ 1,300
89	53rd Street	Meander	Australian	0.3	restriping and signage	$ 23,400
LONG TERM						
90A	North Shore Dr	45th St	Echo Lake Dr	0.6	widen, add striping	$ 137,280
90B	North Shore Dr	45th St	Echo Lake Dr	880	Widen bridge	$ 114,400
91	39th St	N Shore Dr	Australian	0.14	widen, add striping	$ 32,032
92	Australian	36th St	39th St	0.14	widen, add striping	$ 32,032
93A	36th Street	Austrialian	Pointsettia Ave	1.1	restriping and signage	$ 57,200
93B	36th Street	Austrialian	Pointsettia Ave	720	Bridge	$ 93,600
94	Windsor Ave	Service	45th St	0.9	restriping and signage	$ 11,700
95	Echo Lake Dr	Village Blvd	N Shore Dr	0.6	widen, add striping, bridge over I-95	$ 2,340,000
96	Shaker Way	Village Blvd	Haverhill	1.6	New Multi-Use Path	$ 366,080
						$ 2,923,024

Mangonia Park Pedestrian Projects						
Proj. No.	Facility	From	To	Distance/ Quantity	Project	Cost Opinion ($)
SHORT TERM						
97	North Side Station Access	NE Side of Station		1	ADA Ramp and bicycle racks	$ 13,000
98	Over all routing	Mangonia Park Area		4	Pedestrian Signage	$ 1,040
MEDIUM TERM						
99	Meander Drive	Station	53rd Street	0.1	Sidewalk, Lighting	$ 31,200
100	53rd Street	Meander	Australian	0.3	Sidewalk and lighting improvements	$ 93,600
101	N. Australian Ave	SR 710	53rd Street	24	improve curbs to add ramps and make ADA compliant	$ 31,200
LONG TERM						
102	North Shore Dr	0.15 Mi south of 45th St		0.1	narrow lanes on bridge and widen sidewalks	$ 15,600
103	N. Australian Ave	0.3 Mi south of 45th St		0.1	widen sidewalks over bridge	$ 15,600
						$ 188,240

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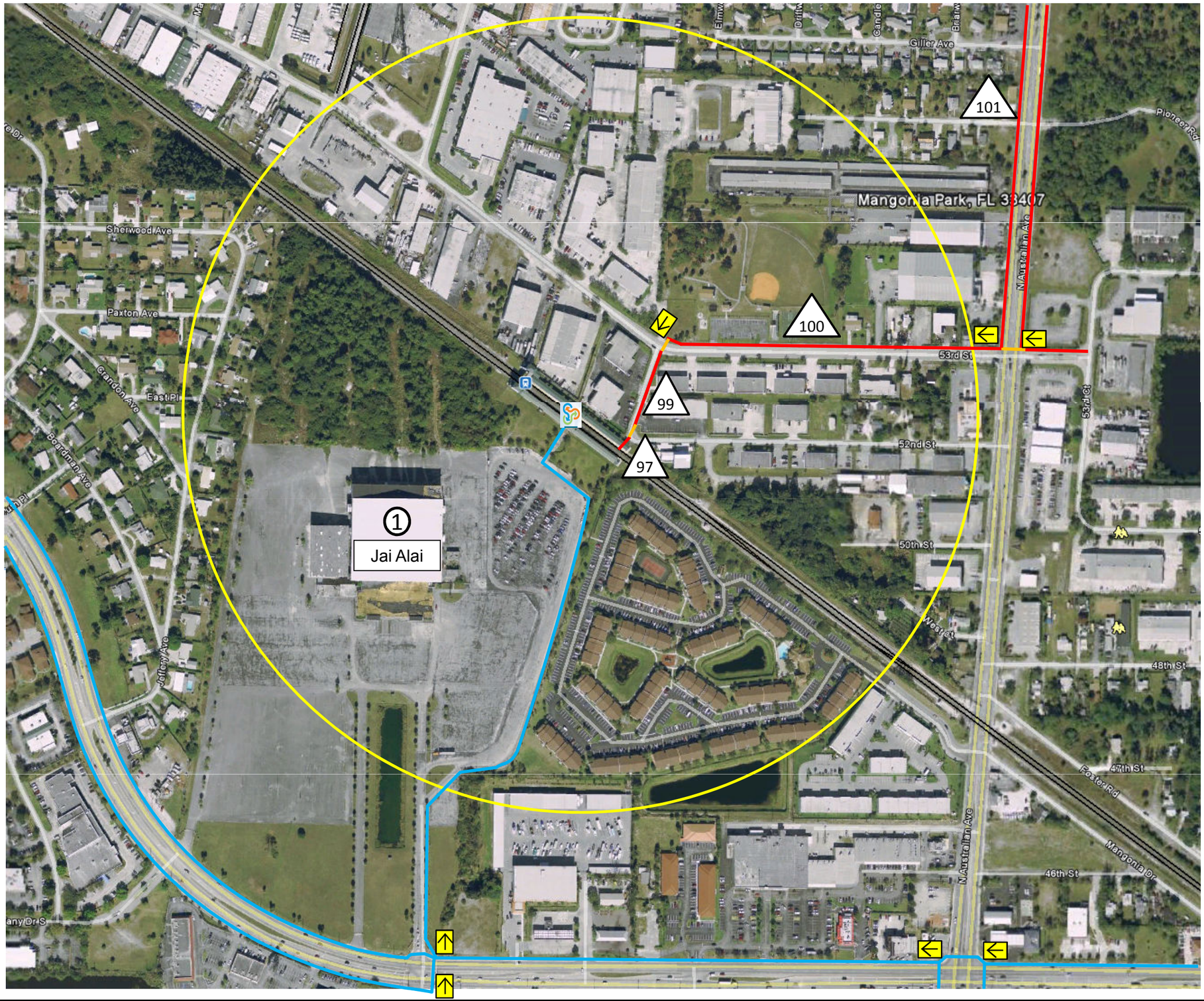

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EXHIBIT 48

Mangonia Park Pedestrian Routing Map

Mangonia Park Tri-Rail Station

¼ Mile Radius

Proposed Pedestrian Route (Sidewalk)

Future Pedestrian Route (Proposed Sidewalk Improvements)

Proposed Crosswalk

Future Pedestrian Route (Recommended Multi-Use Path)

XX — Improvement Number (See Improvements List)

Proposed Pedestrian Routing Signage and Direction of Routing Arrow(s)

0 400 800 FEET

MacKenzie Engineering & Planning, Inc.

Exhibit 49. Mangonia Park Bicycle Routing Map

IMPROVEMENTS

The improvements identified were stratified into short-term, medium-term, and long-term projects. Short-term projects are those projects that can be accomplished quickly with limited design and do not require right-of-way acquisition. Medium-term projects are projects that are expected to take a minimum three to five years to complete because of requirements for funding, engineering, coordination, plan modifications, and/or public involvement processes. Long-term projects are anticipated to require at least five years to complete for reasons stated for medium-term projects and increased complexity, right-of-way acquisition, and/or funding needed for the project.

The projects are prioritized based on the following:

1. Ability to provide additional access to the station
2. Proximity to the station
3. Anticipated benefit to the station (i.e. – reduced walking / bicycling distance to station
4. Ability to provide new / improved access to a service area

These recommendations are relative to the Tri-Rail stations; potentially important projects that greatly improve mobility may have a low priority because they are not proximate to the stations (e.g. – sidewalk improvements more than one mile from a station).

Additional information is provided for each project.

- Improvement Status
    - City Proposed Improvement – improvement is identified within a local government plan (e.g. – comprehensive plan, bikeways plan, recreation plan)
    - County Proposed Improvement – improvement is identified within a County plan

    - FDOT Proposed Improvement – FDOT is planning this improvement
    - New Proposed Improvement – improvement is identified for the first time within this study
- Implementing Agency – This is the agency(s) that is anticipated to implement the improvement. SFRTA could assist the implementing agency with the improvements, but the implementing agency would likely be the agency to maintain the improvement.
- Recommended SFRTA Action – While there are several improvements listed that SFRTA may want initiate, it is recommended that the SFRTA meet with the implementing agencies to discuss the agencies' plans to implement the improvement. This will improve coordination between agencies and reduce redundancy.

Exhibit 50. Short-Term Routing Improvements

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
97	Mangonia Park	North Side Station Access	NE Side of Station		ADA Ramp and bicycle racks	13,000	1	New Proposed Improvement	SFRTA	Prioritize Project
1	Boca Raton	Yamato Road	@ El Rio Trail		Bicycle / Pedestrian signal	117,000	2	New Proposed Improvement	Boca Raton, Palm Beach County, SFRTA, FDOT	Meet with agency(s) on Implementation
2	Boca Raton	Over all routing	Boca Raton Area		Bicycle Signage	11,180	3	New Proposed Improvement	SFRTA	Prioritize Project
8	Boca Raton	Over all routing	Boca Raton Area		Pedestrian Signage	2,080	4	New Proposed Improvement	SFRTA	Prioritize Project
29	Delray Beach	Station Improvements	Delray Beach Station		Sidewalks	62,400	5	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation/ Prioritize Project
30	Delray Beach	Signage Improvements	Delray Beach Routing		Pedestrian Routing signage	520	6	New Proposed Improvement	SFRTA	Prioritize Project
45	Lake Worth	Routing Signage	Lake Worth Area		Bicycle Signage	2,860	7	New Proposed Improvement	SFRTA	Prioritize Project
46	Lake Worth	Lake Worth Road	West of station		Add bike lane through bus lane	2,600	8	New Proposed Improvement	SFRTA, Palm-Tran, Palm Beach County, Lake Worth	Meet with agency(s) on Implementation
62	Lake Worth	Routing Signage	Lake Worth Area		Pedestrian Signage	2,340	9	New Proposed Improvement	SFRTA	Prioritize Project

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
84	West Palm Beach	Over all routing	West Palm Beach Area		Pedestrian Signage	2,600	10	New Proposed Improvement	SFRTA	Prioritize Project
86	Mangonia Park	Over all routing	Mangonia Park Area		Bicycle Signage	520	11	New Proposed Improvement	SFRTA	Prioritize Project
98	Mangonia Park	Over all routing	Mangonia Park Area		Pedestrian Signage	1,040	12	New Proposed Improvement	SFRTA	Prioritize Project
41	Boynton Beach	Overall routing	Boynton Beach Area		Pedestrian Signage	3,120	13	New Proposed Improvement	SFRTA	Prioritize Project
42	Boynton Beach	South Side of Site	On Tri-rail station		Sidewalk and ADA Ramps	1,560	14	New Proposed Improvement	SFRTA	Prioritize Project
12	Delray Beach	Signage Improvements	Delray Beach Routing		Bicycle routing	520	15	New Proposed Improvement	SFRTA	Prioritize Project
13	Delray Beach	Station Improvements	Congress	Station	Bicycle Striping	1,300	16	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation
33	Boynton Beach	Station Entrance	High Ridge	Station	Remove turn lanes and add bike lanes	2,600	27	New Proposed Improvement	SFRTA	Prioritize Project

Exhibit 51. Medium-Term Routing Improvements

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
66	West Palm Beach	Tamarind Avenue	Banyan	25th St	shared lanes striping and signage	22,100	17	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
67	West Palm Beach	Parker Avenue	Banyan	Flamingo	restriping and signage	169,000	18	New Proposed Improvement / City Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
63	Lake Worth	SW Station Connector	Station	Lake Osbourne Dr	Add sidewalks and routing	137,280	19	New Proposed Improvement	SFRTA, Lake Worth	Meet with agency(s) on Implementation/ Prioritize Project
43	Boynton Beach	Gateway Blvd	W. of I-95	E. of I-95	Improve sidewalk and provide ADA Ramps	15,600	20	New Proposed Improvement	Palm Beach County, FDOT, Boynton Beach	Meet with agency(s) on Implementation
34	Boynton Beach	Gateway Blvd	High Ridge	Seacrest	reconstruct median, restripe laneage	455,000	21	New Proposed Improvement	FDOT, Palm Beach County, Boynton Beach	Meet with agency(s) on Implementation
3	Boca Raton	NW 32nd Street	PBCC	El Rio Trail	widen road to add bike lanes	68,640	22	New Proposed Improvement	PBCC, Boca Raton	Meet with agency(s) on Implementation
87	Mangonia Park	Tri-Rail Entrance	45th St	Station	off-street bike lanes and/or restriping for bike lanes	80,080	23	New Proposed Improvement	SFRTA, Mangonia Park	Meet with agency(s) on Implementation/ Prioritize Project
35	Boynton Beach	High Ridge Rd	Gateway Blvd	Miner	widen road to add bike lanes	137,280	26	City Proposed Improvement	Palm Beach County, Boynton Beach	Meet with agency(s) on Implementation
36	Boynton Beach	Gateway Blvd	Renaissance Commons Blvd	High Ridge	restriping and signage (1)	78,000	28	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
99	Mangonia Park	Meander Drive	Station	53rd Street	Sidewalk, Lighting	31,200	29	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
44	Boynton Beach	Miner Road	West of High Ridge	High Ridge	Sidewalk on south side of road	46,800	30	New Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
47	Lake Worth	B Street	12th Ave S	10th Ave N	Bicycle Striping	23,400	31	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
48	Lake Worth	C Street	12th Ave S	10th Ave N	Bicycle Striping	23,400	32	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
49	Lake Worth	SE Station Connector(1)	Station	6th Ave South	Add shared arrow marking	7,020	33	City Proposed Improvement	Lake Worth, SFRTA, Lake Worth CRA	Meet with agency(s) on Implementation/ Prioritize Project
100	Mangonia Park	53rd Street	Meander	Australian	Sidewalk and lighting improvements	93,600	34	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
51	Lake Worth	Wright Drive	6th Ave South	Lake Osbourne Dr	Add shared arrow marking	2,600	35	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
52	Lake Worth	Akron Street	Lake Osbourne Dr	Lake Worth Road	Add shared arrow marking	1,300	36	New Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
88	Mangonia Park	Meander Drive	Station	53rd Street	shared lanes striping and signage	1,300	38	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
89	Mangonia Park	53rd Street	Meander	Australian	restriping and signage	23,400	39	New Proposed Improvement	Mangonia Park, SFRTA	Meet with agency(s) on Implementation
70	West Palm Beach	Evernia/Clematis(1)	Tamarind	Flagler	Restripe, remove parking, remove traffic calming	83,200	40	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
71	West Palm Beach	S Rosmarey Ave	Evernia	Okeechobee	shared lanes striping and signage	5,200	41	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
85	West Palm Beach	Parker S/W gap	Okeechobee	Old Okeechobee	New sidewalk	7,800	42	New Proposed Improvement	West Palm Beach, Palm Beach County, FDOT, SFRTA	Meet with agency(s) on Implementation/ Prioritize Project
37	Boynton Beach	Renaissance Commons Blvd	Old Boynton Rd	Gateway Blvd	restriping and signage	14,300	43	New Proposed Improvement	Boyton Beach	Meet with agency(s) on Implementation
50	Lake Worth	Snowden Dr	Lake Osbourne Dr	6th Ave South	Add shared arrow marking	5,200	44	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
68	West Palm Beach	Flamingo Drive(1)	Parker	Lake	striping and signage	1,950	45	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
69	West Palm Beach	Lake Avenue(1)	Flamingo	Summit	restriping and signage	109,200	46	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
4	Boca Raton	NW 28th Street	FAU Blvd	El Rio Trail	widen road to add bike lanes	45,760	47	New Proposed Improvement	FAU, Boca Raton	Meet with agency(s) on Implementation
101	Mangonia Park	N. Australian Ave	SR 710	53rd Street	improve curbs to add ramps and make ADA compliant	31,200	48	New Proposed Improvement	FDOT, Palm Beach County	Meet with agency(s) on Implementation
72	West Palm Beach	Olive Ave	Evernia	3rd St	shared lanes striping and signage	3,900	53	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
73	West Palm Beach	3rd Street	N Olive	N Dixie	shared lanes striping and signage	1,300	54	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
74	West Palm Beach	N. Dixie Hwy	3rd St	Evernia	shared lanes striping and signage	3,900	55	New Proposed Improvement	West Palm Beach, West Palm Beach CRA	Meet with agency(s) on Implementation
75	West Palm Beach	25th, Tamarind, Service Rd	Tamarind	Windsor Ave	shared lanes striping and signage	7,800	56	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
76	West Palm Beach	Windsor Ave	Service	45th St	striping and signage	11,700	57	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
77	West Palm Beach	36th Street	Windsor	Pointsettia Ave	restriping and signage	41,600	58	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
78	West Palm Beach	15th Street(1)	Tamarind	N Dixie	restriping and signage	20,800	59	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
79	West Palm Beach	7th Street(1)	Autstralian	Rosemary	restriping and signage	15,600	60	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

MEDIUM-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
80	West Palm Beach	Flamingo Drive(1)	Lake	Dixie	restriping and signage	10,400	61	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
81	West Palm Beach	Old Okeechobee	Mercer Ave	Parker	restriping and signage	15,600	62	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
11	Boca Raton	NW 28th Street	FAU Blvd	El Rio Trail	Add Sidewalk	31,200	95	New Proposed Improvement	FAU, Boca Raton	Meet with agency(s) on Implementation
10	Boca Raton	FAU Blvd	NW 35th Street	Florida Atlantic Blvd	Add Sidewalk on West Side and connections to PBCC Campus	124,800	96	New Proposed Improvement	PBCC, FAU, Boca Raton	Meet with agency(s) on Implementation
82	West Palm Beach	Hollywood Pl/Monroe Dr(1)	Parker	Dixie	restriping and signage	13,000	101	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

Exhibit 52. Long-Term Routing Improvements

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
6	Boca Raton	El Rio Trail	Clint Moore	Congress	Add multi-use path	91,520	24	City Proposed Improvement	Boca Raton	Meet with agency(s) on Implementation
14	Delray Beach	Multi-Use Path	SW 10th Street	Atlantic Ave	Construct Multi-Use Path	228,800	25	New Proposed Improvement	SFRTA, FDOT, Palm Beach County, Delray Beach	Research and Establish Rails-with-Trails Policy
64	Lake Worth	SE Station Connector(1)	Station	6th Ave South	Add sidewalks and routing	62,400	37	City Proposed Improvement	Lake Worth, SFRTA, Lake Worth CRA	Meet with agency(s) on Implementation/ Prioritize Project
15	Delray Beach	Atlantic Ave	SFCR Tracks	12th Ave	widen road to add bike lanes	91,520	49	New Proposed Improvement	FDOT, Palm Beach County, Delray Beach	Meet with agency(s) on Implementation
16	Delray Beach	12th Ave	NW 2nd St	SW 2nd St	widen road to add bike lanes	114,400	50	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
17	Delray Beach	SW 2nd Street	SW 12th Ave	Federal Hwy	widen road to add bike lanes	251,680	51	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
53	Lake Worth	12th Ave South	Lake Osbourne Dr	S Federal Hwy	widen road to add bike lanes	274,560	52	City Proposed Improvement	Lake Worth, Lake Worth CRA	Meet with agency(s) on Implementation
18	Delray Beach	Lowson Rd / SW 10th Street	Congress	SE 5th Ave	widen road to add bike lanes and / or reconfigure available pavements	343,200	63	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
19	Delray Beach	Lowson Rd	Military	Congress	widen road to add bike lanes	434,720	64	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
20	Delray Beach	Lowson Rd	Military	Congress	Bridge widening	84,500	65	City Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
21	Delray Beach	NW 2nd Street	NW 12th Ave	Federal Hwy	widen road to add bike lanes	251,680	66	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
22	Delray Beach	Homewood Blvd	Linton	Lowson	reconfigure roadway and restripe to add bike lanes	10,400	67	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
23	Delray Beach	Homewood Blvd	Germantown	Linton	widen road to add bike lanes	68,640	68	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
54	Lake Worth	Boutwell Rd	2nd Ave North	10th Ave N	widen road to add bike lanes	137,280	69	City Proposed Improvement	Lake Worth, Lake Worth CRA, FDOT	Meet with agency(s) on Implementation
55	Lake Worth	2nd Ave North	Davis	Boutwell	reconfigure roadway and restripe to add bike lanes	320,320	70	New Proposed Improvement	Lake Worth, Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
56A	Lake Worth	Davis	Lake Worth Rd	Alemeda Dr	widen road to add bike lanes	388,960	71	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
56B	Lake Worth	Davis	Lake Worth Rd	Alemeda Dr	Canal crossings	21,840	71	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
58	Lake Worth	Lakwood	Davis	Haverhill	widen road to add bike lanes	343,200	72	New Proposed Improvement	Palm Beach County, Palm Springs, Greenacres	Meet with agency(s) on Implementation
57A	Lake Worth	Kirk	Melaleuca	Park Ln	widen road to add bike lanes	457,600	73	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
57B	Lake Worth	Kirk	Melaleuca	Park Ln	Canal crossings	21,840	73	New Proposed Improvement	Palm Springs, Palm Beach County	Meet with agency(s) on Implementation
90A	Mangonia Park	North Shore Dr	45th St	Echo Lake Dr	widen, add striping	137,280	74	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
90B	Mangonia Park	North Shore Dr	45th St	Echo Lake Dr	Widen bridge	114,400	74	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
91	Mangonia Park	39th St	N Shore Dr	Australian	widen, add striping	32,032	75	West Palm Beach Proposed Improvement	West Palm Beach, Mangonia Park	Meet with agency(s) on Implementation
92	Mangonia Park	Australian	36th St	39th St	widen, add striping	32,032	76	West Palm Beach Proposed Improvement	West Palm Beach, Palm Beach, County	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
93A	Mangonia Park	36th Street	Austrialian	Pointsettia Ave	restriping and signage	57,200	77	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
93B	Mangonia Park	36th Street	Austrialian	Pointsettia Ave	Bridge	93,600	77	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
102	Mangonia Park	North Shore Dr	0.15 Mi south of 45th St		narrow lanes on bridge and widen sidewalks	15,600	78	New Proposed Improvement	Mangonia Park	Meet with agency(s) on Implementation
24	Delray Beach	Germantown	Linton	Homewood	widen road to add bike lanes	183,040	80	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
25	Delray Beach	NW 4th Ave	Linton	Lake Ida	widen road to add bike lanes	526,240	81	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
26	Delray Beach	SW 10th Ave	SW 10th St	Lindell	widen road to add bike lanes and / or reconfigure available pavement	183,040	82	New Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
27	Delray Beach	Lindell Blvd	SW 10th Ave	Dixie Hwy	widen road to add bike lanes	228,800	83	City Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
28	Delray Beach	Carl Bolter Dr	Lindell Blvd	County Club Dr	widen road to add bike lanes	91,520	84	New Proposed Improvement	Delray Beach	Meet with agency(s) on Implementation
38	Boynton Beach	Miner Rd	Congress	High Ridge	widen road to add bike lanes	228,800	85	New Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
39	Boynton Beach	Miner Rd	Lawrence	Congress	widen, add striping, widen bridge	228,800	86	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
40	Boynton Beach	Miner Rd	Military	Lawrence	widen, add striping	137,280	87	City Proposed Improvement	Boynton Beach, Palm Beach County	Meet with agency(s) on Implementation
59	Lake Worth	High Ridge	Lake Osbourne Dr	Hypoluxo Rd	widen road to add bike lanes	434,720	88	City Proposed Improvement	Lake Worth, Hypoluxo, Palm Beach County, Lantana	Meet with agency(s) on Implementation

LONG-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
60	Lake Worth	FEC Rails with Trails	All of Lake Worth		Add Multi-Use Path	1,372,800	89	FDOT Proposed Improvement	FDOT	none
61	Lake Worth	Barton/Andrew Redding Rd	12th Ave S	Lantana Rd	widen road to add bike lanes	251,680	90	City Proposed Improvement	Lake Worth, Lantana	Meet with agency(s) on Implementation
65	Lake Worth	Boutwell Rd	2nd Ave North	10th Ave North	Sidewalk	93,600	91	FDOT Proposed Improvement	FDOT, Lake Worth	Meet with agency(s) on Implementation
83	West Palm Beach	Southern Blvd	Parker	Lake	widen road to add bike lanes	100,425	92	City Proposed Improvement	West Palm Beach, Palm Beach County,	Meet with agency(s) on Implementation
31	Delray Beach	SW 10 Street	FEC Rail Crossing		Install sidewalk and rail crossing on north side of road	130,000	93	New Proposed Improvement	FEC, FDOT, Palm Beach County, Delray Beach	Meet with agency(s) on Implementation
32A	Delray Beach	SW 10 Street / Lowson Blvd	Canal	Dover Road	Install sidewalk on north side of road	93,600	94	New Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
32B	Delray Beach	SW 10 Street / Lowson Blvd	Canal	Dover Road	Bridge widening	42,250	94	New Proposed Improvement	Delray Beach, Palm Beach County	Meet with agency(s) on Implementation
7	Boca Raton	NW 20th St	W. of NW 4th Ave		Widen Bridge to add bike lanes	130,000	97	New Proposed Improvement	Boca Raton, FAU	Meet with agency(s) on Implementation
94	Mangonia Park	Windsor Ave	Service	45th St	restriping and signage	11,700	98	New Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation
95	Mangonia Park	Echo Lake Dr	Village Blvd	N Shore Dr	widen, add striping, bridge over I-95	2,340,000	99	West Palm Beach Proposed Improvement	West Palm Beach, Palm Beach County, FDOT	Meet with agency(s) on Implementation
5	Boca Raton	FAU Blvd	NW 28th St	Spanish River Blvd	widen road to add bike lanes, requires removal of curbs, alternative is bicycle boulevard	160,160	100	New Proposed Improvement	FAU, PBCC, Boca Raton	Meet with agency(s) on Implementation
96	Mangonia Park	Shaker Way	Village Blvd	Haverhill	New Multi-Use Path	366,080	102	West Palm Beach Proposed Improvement	West Palm Beach	Meet with agency(s) on Implementation

CONCLUSIONS

This document provides recommendations for routing from pedestrian and bicycle generators to the six Tri-Rail Stations within Palm Beach County (Mangonia Park, West Palm Beach, Lake Worth, Boynton Beach, Delray Beach, Boca Raton) using pedestrian and bicycle facilities. The plan routes pedestrians within ¼ mile of each station and bicyclists within 3 miles of each station where feasible. Feasibility was determined by the presence of dedicated bicycle or pedestrian facilities or the ability to construct those facilities within existing rights-of-way.

The pedestrian routing plans are estimated to cost $1,200,000 to implement at all six stations. The improvements do not need to occur at one time, but can be phased in over time as funding becomes available. All of the stations are accessed by pedestrian facilities (primarily sidewalks) along nearly all facilities proximate to the stations. The bicycle routing was much more difficult to accomplish because of the limited amount of dedicated bicycle facilities and the limited amount of bicycle planning that has occurred. The bicycle routing plan requires an estimated $11,100,000 to implement all of the bicycle network improvements. Completion of the bicycle routing network is feasible, but will require significant investment in bicycle facilities and cooperation amongst all of the agencies, including:

- Local Governments
- Palm Beach County Government
- Palm Beach County MPO
- Community Redevelopment Agencies
- Florida Department of Transportation
- Railroad Agencies/Corporations

Installation of bicycle and pedestrian facilities may not be feasible on all roads unless significant reprioritization of needs (e.g. – lane reductions to install bicycle lanes) occurs to support bicycling. Construction of off-street facilities within rights-of-way operated by utilities (e.g. - FP&L), water management districts (e.g. - Lake Worth

Drainage District), and railroads (e.g. FDOT, CSX, FEC) need to be explored to expand bicycle and pedestrian access proximate to the Stations, especially where facilities do not exist, cannot fit within existing right-of-way, or cannot provide adequate access. There are several instances where multi-use paths appear feasible within railroad or canal rights-of-way that can provide bicycle and pedestrian access to the Stations that does not exist today and cannot otherwise be provided.

The following actions are recommended by SFRTA

6. Begin implementation of the Short-Term SFRTA improvements
7. Meet with other implementing agencies to review the projects, identify responsibility, project priority, and encourage implementation of projects proximate to the stations.
8. Research the feasibility of multi-use paths adjacent to rail lines (rails-with-trails) and establish a policy for implementation
9. Encourage discussions with the Lake Worth Drainage District to allow for multi-use paths with District rights-of-way
10. Upon establishing policy that allows multi-use paths adjacent to rail line (3.) and canals (4.), revisit the projects and priorities to determine if multi-use paths are needed and recommended.

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
97	Mangonia Park	North Side Station Access	NE Side of Station		ADA Ramp and bicycle racks	13,000	1	New Proposed Improvement	SFRTA	Prioritize Project
1	Boca Raton	Yamato Road	@ El Rio Trail		Bicycle / Pedestrian signal	117,000	2	New Proposed Improvement	Boca Raton, Palm Beach County, SFRTA, FDOT	Meet with agency(s) on Implementation
2	Boca Raton	Over all routing	Boca Raton Area		Bicycle Signage	11,180	3	New Proposed Improvement	SFRTA	Prioritize Project
8	Boca Raton	Over all routing	Boca Raton Area		Pedestrian Signage	2,080	4	New Proposed Improvement	SFRTA	Prioritize Project
29	Delray Beach	Station Improvements	Delray Beach Station		Sidewalks	62,400	5	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation/ Prioritize Project
30	Delray Beach	Signage Improvements	Delray Beach Routing		Pedestrian Routing signage	520	6	New Proposed Improvement	SFRTA	Prioritize Project
45	Lake Worth	Routing Signage	Lake Worth Area		Bicycle Signage	2,860	7	New Proposed Improvement	SFRTA	Prioritize Project
46	Lake Worth	Lake Worth Road	West of station		Add bike lane through bus lane	2,600	8	New Proposed Improvement	SFRTA, Palm-Tran, Palm Beach County, Lake Worth	Meet with agency(s) on Implementation
62	Lake Worth	Routing Signage	Lake Worth Area		Pedestrian Signage	2,340	9	New Proposed Improvement	SFRTA	Prioritize Project

SHORT-TERM PROJECTS

Proj. No.	Station	Location	From	To	Improvement	Cost ($)	Rank	Improvement Status	Implementation Agency(s)	Recommended SFRTA Action
84	West Palm Beach	Over all routing	West Palm Beach Area		Pedestrian Signage	2,600	10	New Proposed Improvement	SFRTA	Prioritize Project
86	Mangonia Park	Over all routing	Mangonia Park Area		Bicycle Signage	520	11	New Proposed Improvement	SFRTA	Prioritize Project
98	Mangonia Park	Over all routing	Mangonia Park Area		Pedestrian Signage	1,040	12	New Proposed Improvement	SFRTA	Prioritize Project
41	Boynton Beach	Overall routing	Boynton Beach Area		Pedestrian Signage	3,120	13	New Proposed Improvement	SFRTA	Prioritize Project
42	Boynton Beach	South Side of Site	On Tri-rail station		Sidewalk and ADA Ramps	1,560	14	New Proposed Improvement	SFRTA	Prioritize Project
12	Delray Beach	Signage Improvements	Delray Beach Routing		Bicycle routing	520	15	New Proposed Improvement	SFRTA	Prioritize Project
13	Delray Beach	Station Improvements	Congress	Station	Bicycle Striping	1,300	16	New Proposed Improvement	Palm Beach County, SFRTA, Palm-Tran	Meet with agency(s) on Implementation
33	Boynton Beach	Station Entrance	High Ridge	Station	Remove turn lanes and add bike lanes	2,600	27	New Proposed Improvement	SFRTA	Prioritize Project

APPENDICES